

Amateur  
**Photographer**

**RAISING YOUR PHOTOGRAPHY  
TO THE NEXT LEVEL**

SPRING 2015

# ADVANCED PHOTOGRAPHY SKILLS

## Landscape Essentials

- ✓ Expert planning advice
- ✓ Exposure secrets for perfect landscapes
- ✓ Editing skills you need to know
- ✓ Guide to essential equipment



### APPS FOR LANDSCAPES

Nine apps you need to download

### 3 VITAL FILTERS...

And why you need them in your bag

### LONG EXPOSURES

Create classic landscape photos

### TRIPOD GUIDE

What to look for and what to buy

**PLUS** HOW TO TAKE BETTER BLACK AND WHITE LANDSCAPES



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# Welcome

Of all of the genres in photography it is landscapes that are probably the most accessible to amateur photographers. To take good landscape images you don't need expensive lighting kit, and you won't feel nervous as you may taking photos in the street or taking a portrait in the studio. Instead all you need is a camera, your feet and some patience, often a lot of patience.

Whilst it is the simplicity of the landscape image that is appealing, it is the sense of exploration and adventure that perhaps draws so many people to taking these images. We often start by looking at landscape images and visiting some of the classic tried and tested locations, but it isn't long before we are exploring for ourselves, walking down paths untrodden, and searching maps for alternative views.

And then there is 'the moment', when everything falls into place. You are in the right place at the right time, just

as the light and the clouds in the sky are perfectly positioned. You have captured that moment in time, it is yours and if you came back to the same location hundreds of times, it would never look the same again. Those are the moments landscape photographers live for.

Half of the battle in getting a great landscape image is in careful planning and preparation. In this issue of *Amateur Photographer: Advanced Photography Skills* we tell you how to make sure you are in the right location at the right time, and reveal the the smartphone apps that can give you a helping hand. And it doesn't stop there. This issue is packed with shooting techniques, editing skills, and even buying advice on all the accessories you should own.

So sit back and read away, and hopefully you'll be inspired, and prepared, to go out and take some incredible landscape images of your own.

**RICHARD SIBLEY, EDITOR**

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**Amateur Photographer**  
**ADVANCED**  
**PHOTOGRAPHY SKILLS**

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# Contents

## 6 PLANNING AND PREPARATION

For successful landscape photography, don't skimp on the preparation. Follow our research tips and it will make a world of difference

## 12 ESSENTIAL APPS

We reveal the most useful landscape photography apps that you need on your phone right now

## 14 THIRD-PARTY LANDSCAPE LENSES

Look out for these used lenses from the independent brands – you might just get a bargain

## 18 PHOTOGRAPH LANDSCAPES WITH A TELEPHOTO LENS

Try it and you'll expand your creativity

## 24 COMPOSITION

Advice on framing and cropping, plus composition top tips from the pros

## 28 SHARPER LANDSCAPES

We help you master the art of capturing pin-sharp landscape images, with a few handy techniques

## 34 CUSTOM WHITE BALANCE

Want accurate hues? You need to set up a custom white balance – here's how to do so

## 38 DYNAMIC RANGE AND METERING

We explain the concept of dynamic range and what effect it has on the images you take

## 44 FILTERS

The three filters you cannot live without

## 52 BLACK & WHITE LANDSCAPES

How to shoot in b&w to convey more meaning and atmosphere

## 58 COMPLETE GUIDE TO SHOOTING INFRARED IMAGES

It's easier than you might think, and results are often stunning. We explain all you need to know

## 67 LONG EXPOSURES

Shooting long-exposure images can be daunting at first but we show you how to get results you'll be proud of

## 73 13 LANDSCAPE EDITING TRICKS

There are certain crucial editing skills that you will need at times, from removing noise to perspective correction, to make sure your landscape images are just the way you remembered the scene. Over 12 pages, we reveal the skills you need to know

## 86 CABLE RELEASES

For successful landscape images, a cable release is essential. We look at six different systems

## 88 TRIPODS

A tripod is a vital piece of kit. We explain exactly how to choose the best one for you

## 95 LANDSCAPE ACCESSORIES

We round up 15 other accessories you need for shooting landscapes







18 TELEPHOTO LENSES



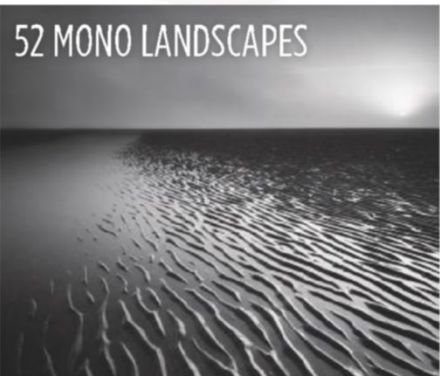
24 COMPOSITION



44 FILTERS



52 MONO LANDSCAPES



58 SHOOTING INFRARED



67 LONG EXPOSURES





# Planning and preparation

The key to landscape photography is proper planning and preparation. Knowing exactly when and where to shoot dramatically increases your chances of success and saves a lot of time in the process

Look through most photography magazines and you will see the same locations time and again. There are countless sites all over the UK that are notorious for photographers almost having to queue up to take photographs. Places such as Durdle Door in Dorset, or the wooden jetties on Derwent Water in the Lake District, are fantastic locations, but with so many images of them already existing, it is difficult to make your photograph stand out from the rest. While it isn't necessarily a bad thing to have a great photograph that is similar to someone else's, it is nicer to have your own unique image from your own location, or at least to see how you can photograph the more famous locations differently.

Thanks to the internet, it is now possible to explore locations without having to leave your home, which makes the planning stage of a landscape shoot much easier. The first thing to do is to find out what locations have already been photographed many times before. If you are interested in a particular area, visit Flickr ([www.flickr.com](http://www.flickr.com)) and search for the name of the location. Very few places have escaped the photographer's lens completely, and looking at the images taken by other photographers will ■





With careful  
planning and  
preparation you  
can make sure you  
are in the right  
place at the right  
time to capture  
the perfect shot





❑ give you an idea of how to plan your own shoot.

Look for features in the landscape, and see how the location changes at different times of the day or in different seasons. All these ideas will be useful when you come to make your final decision about what your photograph should look like.

## TIME OF DAY

One of the biggest decisions facing the landscape photographer is what time of day to shoot a particular location. Some of the most fantastic colours, as well as long dramatic shadows, are produced just before and after sunrise and sunset, and these make it the favourite time for most people.

The sun will always rise roughly to the east and set in the west, but consider how this light will affect what is illuminated in the landscape. Will the side of a particular hill be lit up by the sun during sunrise or sunset? At what time of day will the sun be bright enough to cause a perfect reflection of that hill in the lake?

While these are questions that can be fairly difficult to answer without first visiting the location at different times of the day, there are ways to work out when the light will hit certain features in the scene while you're sitting at home. An Ordnance Survey map will give you a rough idea of where the sun will rise and set in relation to your location, but for a more comprehensive solution try the Photographer's Ephemeris ([photoephemeris.com](http://photoephemeris.com)). This is a simple piece of software for use on either a computer or an Apple iPhone/iPad to calculate precisely where and at what time the sun will rise and set on a specific day at any point in the future.

By using a slider you can see how the position of the sun will change over the course of the day, so if you do want to see the sunlight hit a particular feature in the landscape you can find out at exactly what time this will

**Pack your bag carefully and be sure to plan for sudden changes in weather**

happen – which will allow you to work out just how far in advance you need to be at the location in order to set up for the shot.

For example, if you want to photograph a mountain with a lake to its east, the Photographer's Ephemeris will

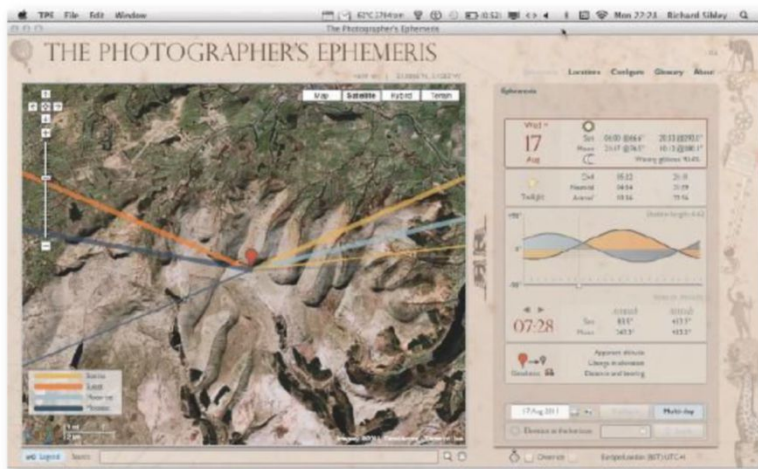
## ESSENTIAL KIT

Besides camera equipment, there are a number of other items you should pack. If you are heading off the beaten track in the Lake District, Brecon Beacons, Dartmoor or a similarly remote landscape, a map and compass should be high on your list. Despite mobile phones being able to access maps, many will require an internet connection that may not be available in a remote landscape. Similarly, mobile phone batteries can also die. With this in mind, make sure your mobile is fully charged and use an in-car charger to keep it topped up while travelling between locations. A back-up USB battery is also a great way to keep your phone, and possibly even your camera battery, topped up with power.

The most obvious advice of all is to take a bottle of water and some sweets, chocolate or a banana or two. If you don't stay hydrated or are low on energy, you will tire more easily and won't be able to stay out taking images for as long. Also, tiredness can lead to simple mistakes, such as forgetting to shoot in raw or forgetting to set the correct ISO sensitivity.

Make sure you wear appropriate clothing and footwear so you can keep warm and dry while out on a shoot. Walking boots are usually the preferred choice for mountainous shoots, but for coastal venues and other





show a map of that location. Moving the slider will change the time of day and show the exact position of the sun throughout. You will then be able to see at exactly what time the sun will be illuminating the mountain from along the lake, allowing you to stand at the far end of the lake

As well as checking the weather, it may be worth checking tide times, as well as sunrise and sunset

and capture the mountain nicely lit up by the early morning sunshine. You can work out the time to the exact minute, so you can arrive and set up your camera gear in plenty of time.

Although it is always ideal to know your intended location first-hand, tools such as the Photographer's Ephemeris make it possible to know the right time to visit a location in order to catch sunrise or sunset. The information it provides even allows you to calculate where to stand to capture the perfect image. It can save a lot of time, and it means you don't have to continually get up early and visit your location time and again in an effort to perfect your picture.

## TRAVELLING

If you are planning to visit your location at a very specific time, such as sunrise or sunset, make sure you allow enough time to get there. If you are driving, take into account any traffic you may face, particularly in the evenings. Also include the time it will take to park and walk to your location, and allow yourself ten minutes to set up your camera and tripod and test your exposure settings.

## ACCESS

Make sure you are not trespassing on private land when taking photographs. There are many public rights of way in the UK, with footpaths and bridleways for walkers, horses and cyclists. There are also paths where the landowner allows people to use walkways across their land, but these are not officially public rights of way. Ordnance Survey maps of 1:50,000 and 1:25,000 scale show public paths.

Certain areas in National Parks, Forestry Commission woodland and National Trust land offer open access. This means that the public has legal foot access to any open area. Some of these areas are clearly marked, but always be sure you are not trespassing on private land by checking local maps and guides.

watery locations you can't beat a good pair of wellies.

A decent waterproof jacket is also a good idea if you're going to be shooting out in changeable conditions, while also think about some active-wear trousers, with some offering a water-repellent finish and a plethora of pockets to tuck bits of kit into. A Berghaus Stormcloud waterproof jacket (£75, pictured) and pair of Navigator Cargo trousers (£45) is a great starting point.

If you're getting to your location in anticipation of sunrise or returning to your car post-sunset, then an LED headlamp, such as the Petzl Tikka 2 (£25, pictured), is an incredibly handy piece of kit. Not only does it free your hands if you're lugging kit around, but it also allows you to see various camera settings in poor lighting conditions easily and quickly.

Whether you're shooting at a stormy coastal location or you've got caught out in the elements, a



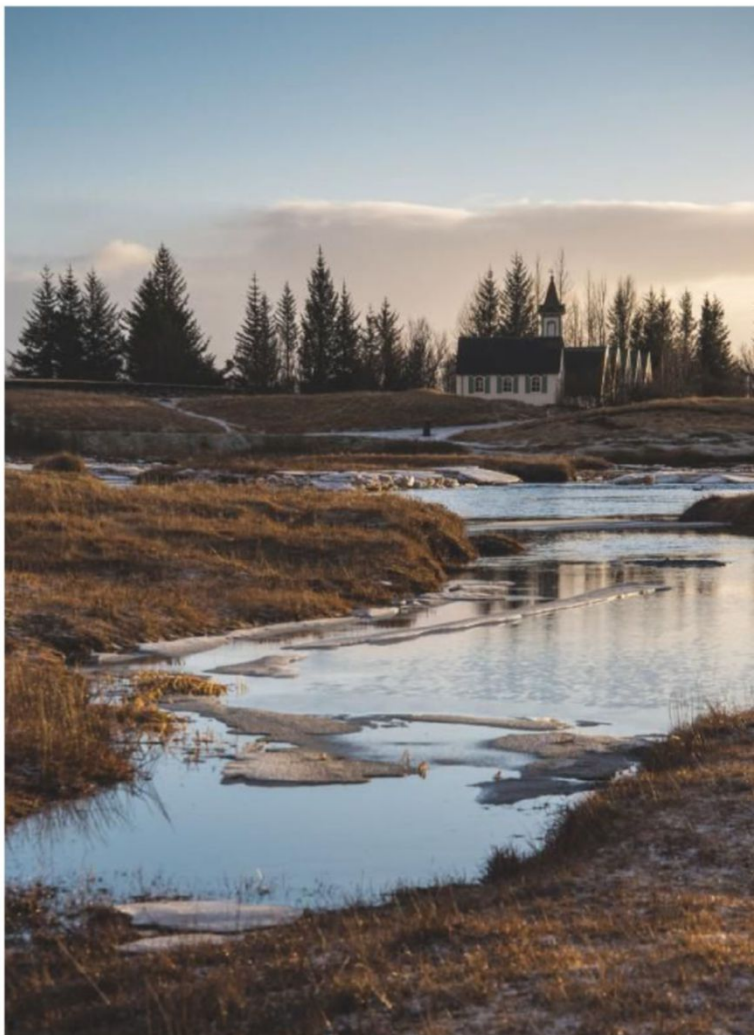
microfibre towel is handy to have in your bag to quickly absorb water that may have collected on your kit, while it is soft enough to use on your lenses.

Obviously what you take is going to be dependent on the location and the weather. If there is a chance the weather could change, make sure that you have packed appropriately. Obviously this is extremely important in areas where the conditions can change quickly, such as mountainous areas, but remember that this doesn't always mean wet and windy weather. If the sun comes out then you're going to want water, a hat and even sun cream, so make sure that you squeeze these into your bag.

If you are travelling by car it can often be a good idea to keep a spare change of clothes, and even footwear in the boot. If you are wet, or covered in mud, you could be uncomfortable, which is the last thing you want if you have a long car journey ahead of you. Try packing a bath towel too, to help dry yourself, and possibly even a blanket to get warm if you have been out for a while. It may sound extreme, but you will be far more comfortable if you have these items on standby and as a result will enjoy the experience of being out taking images far more.







## PACKING YOUR CAMERA BAG

While it is best to pack your camera equipment to accommodate any photo opportunity that you come across, if you are planning to walk for any length of time try to reduce the weight you will be carrying. As you are going to be specifically taking landscapes, I would suggest taking a fixed wideangle lens and a mid-range zoom, such as a 28-70mm or a 28-105mm lens. This will allow you to have a sharp prime lens for most landscapes and a zoom lens to pick out specific subjects in the landscape. If you are driving between different locations, then by all means carry more lenses with you but leave them securely in the boot of your car to keep what you are carrying to a minimum.

One essential item for sharp images is a remote camera release. Combined with mirror lock-up, this will allow you to keep to a minimum any vibrations caused by touching the camera, mirror slap or firing the shutter.

If you're planning to be out for the whole day, it is worth taking a spare camera battery with you, particularly in colder conditions where the batteries won't perform to their full ability. Also, even if your camera has an in-camera level facility, it is always worth carrying a separate hotshoe-mounted bubble level to help ensure that your images are straight.



Using apps you can calculate exactly where the sun is going to be and the angle of the light



## THE WEATHER

As unpredictable as the British weather can be, most 24-hour forecasts are reasonably accurate and offer at least an idea of what you may be faced with before heading out. So make sure you check the weather beforehand and, if you are determined to head out even in the pouring rain, make sure you have packed your camera kit and clothing accordingly. It may seem like common sense, but when that 10% chance of a downpour materialises you'll be thankful that you packed a waterproof jacket and your camera in its water-resistant case.

Checking the weather will not only help you decide whether it is worth getting out of bed or to remind you to take a coat – it can also help to prevent a dangerous situation. Although some of the best-known landscape locations aren't far from a main road, many more are well off the beaten track, out on the moors or in mountainous regions, so always take care and be prepared. If there is the likelihood of a thunderstorm, heavy rain or snow, think carefully about whether you will be safe going out. If you think the conditions are manageable, remember to dress and pack your equipment appropriately.

If you plan to photograph seascapes, knowing what the tide times are is just as essential as knowing what kind of weather to expect.

There is no point turning up at a venue ready to take long-exposure images of a wooden pier heading out to sea if the tide is out and there is a mile of exposed sand when you arrive. Similarly, if you want to photograph the rugged rock pools off the coast of Jersey, you'll want to know when the tide will be low enough to do so.

With safety in mind, it is important to know when the tide will be in. You don't want to be stranded in a bay that can only be accessed at low tide when the water is coming in. To check the tide times around the UK coastline, simply visit [www.bbc.co.uk/weather/coast\\_and\\_sea/tide-tables](http://www.bbc.co.uk/weather/coast_and_sea/tide-tables)



# D5500

*"You don't need many ideas, only a new perspective."*

*Andrius Aleksandravičius*

**I AM** DIFFERENT

Shot by Andrius Aleksandravičius in Valencia  
with 14-24mm NIKKOR | Exposure 1/100s | ISO 500  
Photo © Andrius Aleksandravičius



Photographer Andrius Aleksandravičius expresses the full potential of his creativity – and so can you. Turn your ideas into great images with the advanced technology of the D5500. Get inspired by Andrius' full story and take your photography to the next level with the D5500. Visit [europe-nikon.com/iamdifferent](http://europe-nikon.com/iamdifferent)



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# Apps for Landscape Photographers

If you think smartphones are just for games then think again. There are many great apps that can be of real benefit to landscape photographers. We round up the apps you should have on your phone

## MAPS AND NAVIGATION

It seems obvious, but any good landscape photographer should know where they are in the world, and how to get there. A good mapping app is a must, but to save time getting to your location a navigation app with current traffic info is also useful.



### GOOGLE MAPS **FREE**

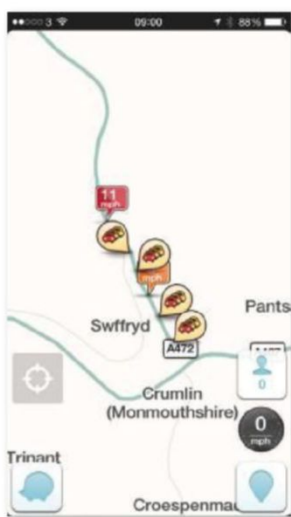
**ANDROID**

<https://play.google.com/store/apps/details?id=com.google.android.apps.maps&hl=en>

**APPLE**

<https://itunes.apple.com/gb/app/google-maps/id585027354?mt=8>

Although Apple devices come with Apple's own app software as standard, it is still worth installing Google's version for its extensive landmark listings and links to locations, especially as it also includes turn by turn navigation.



### WAZE **FREE**

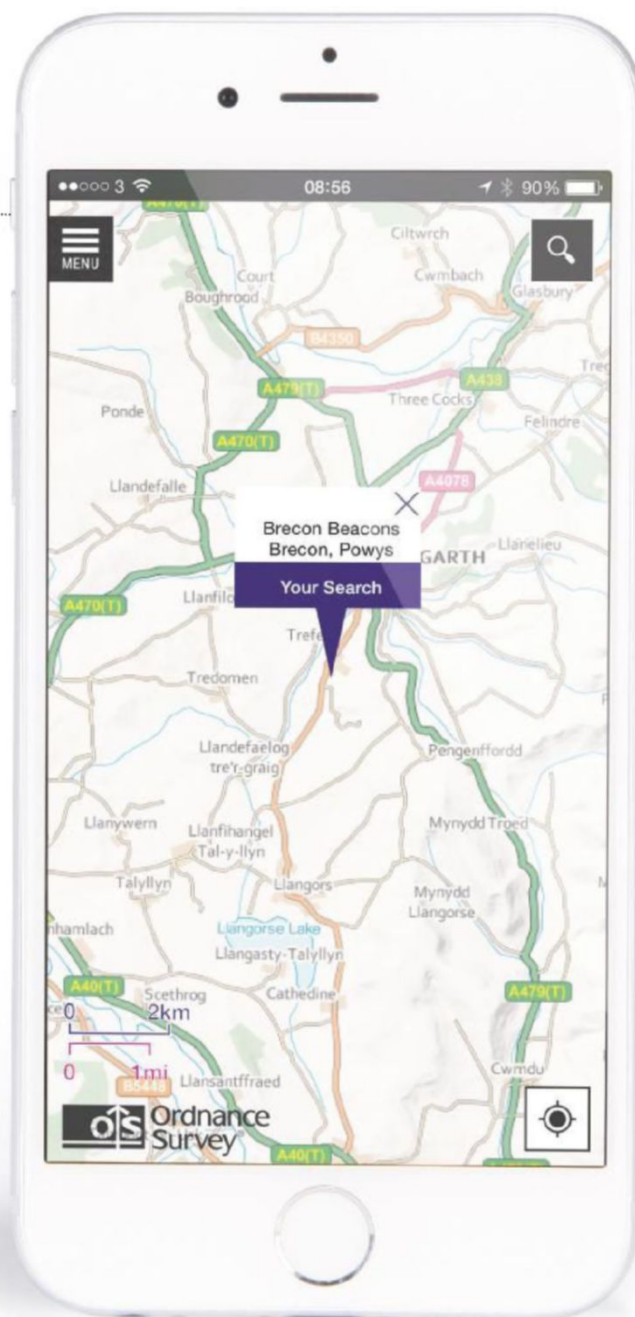
**ANDROID AND IOS**

[www.waze.com](http://www.waze.com)

Waze is a fantastic navigation app that relies on feedback from its users to judge traffic conditions. For example, Waze knows if you are driving at 5mph on a 50mph stretch of road, and will see this is a build up of traffic. You can even report accidents and incidents, all of which allow Waze to build up an idea of what traffic conditions are like.

Waze has well over 50 million users, many of whom are in the UK, and the app has a social aspect, so if you want to, you can let friends know where you are heading and your ETA. This is useful if you are meeting up with fellow photographers at a location.

Another use for Waze, or any other sat nav, is that you can add favourite locations. Add a location and start to compile your own list of your favourite photo spots, and use the app to find the quickest way back to them time and time again.



### OS MAPFINDER **FREE**

(69p for Landranger Maps and £1.99 for Explorer Maps)

**ANDROID OR IOS**

<https://www.ordnancesurvey.co.uk/shop/mapfinder>

If you are in the middle of nowhere with no phone service, it is important that you have a map that doesn't require a data connection. Ordnance Survey has a free app that allows the optional download of high-definition maps that can be used without Wi-Fi or data connection. Routes can be planned, distances measured, and photos can even be added to locations. If you are off exploring a particular area of the UK, a map of your destination is a must – it may just save you from getting lost.



# WEATHER

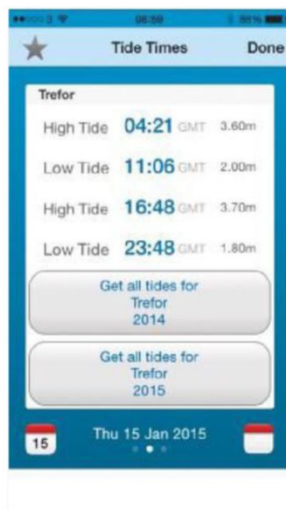
There are so many weather maps available that the Android and Apple iOS stores have their own sections dedicated to them. Making sure that you have one, or more, weather apps means that you can prepare for the worst that the day may throw at you, and also keep updated with any potential storms on the horizon.



## MET OFFICE WEATHER FREE

ANDROID AND IOS

<http://www.metoffice.gov.uk/services>  
With up to date weather forecasts, as well as 24-hour and five-day forecasts, the Met Office app is the only weather app you will need in the UK. It can even send notifications to your phone when severe weather warnings are issued. Importantly for photographers, up to seven favourite locations can be saved – so you can plan a weekend away shooting and know what day to visit which location. Also useful is the UV index, warning you if you should be packing sunscreen, plus forecasts for visibility, wind speed and direction and also the ‘feels like’ temperature, which takes the wind into account. Sunrise and sunset times are also featured.



## TIDEPOINT FREE

IOS

[www.tidepoint.co.uk](http://www.tidepoint.co.uk)

If you are heading to the coast then knowing the high and low tide times can mean you get that beautiful long-exposure seascape you have been looking for. It can also, more importantly, mean that you don't get cut off from land when exploring a secluded bay. The Tidepoint app lists the tide times for the next seven days at hundreds of locations around the British coastline. If you want a longer forecast, then annual guides for locations are also available for download via the app.



## PHOTOGRAPHER'S EPHEMERIS £5.99

ANDROID AND IOS

<http://photoephemeris.com/>

An absolute essential to have on your Android or iOS device. This app can calculate the position of the sun or moon at any particular point in time, anywhere on earth. Its sophisticated calculations can even tell you how long shadows will be, enabling you to see if a landscape may be in shade.

With the option of being able to also see the position of the moon, it is great for astrophotography too, or if you want the moon to feature in your early evening landscape images. The app is worth every penny.

# SHOOTING

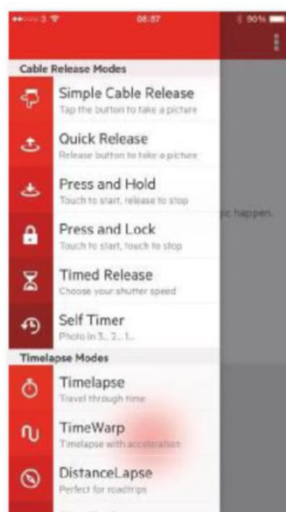
Smartphones aren't just for reference, there are also numerous apps that can help you to take your photos.

## LONGTIME EXPOSURE CALCULATOR FREE

IOS <https://itunes.apple.com/gb/app/longtime-exposure-calculator/id362297743>

There are numerous long exposure calculator apps for both Android and iOS – just search ‘long exposure calculator’ and you should find plenty to choose from. However, one of the best is the LongTime Exposure Calculator. This app has one very simple premise, to take the hassle out of finding the correct exposure when using neutral density (ND) filters. Simply put in the correct, unfiltered exposure, tell the app which strength ND filter you are using, and it will then

tell you the adjusted exposure time when using that filter. It takes a lot of the guesswork and counting on fingers out of the equation, and the large bold text makes the app easy to see in dull conditions. If you have an ND filter, this app will be a welcome addition.



## TRIGGERTRAP £22.99

ANDROID AND IOS

<http://triggertrap.com/>



## IOSHUTTER £59.99

IOS ONLY

<http://enlightphotopro.com/gear/ioshutterslr/>

Both these apps beautifully combine hardware and software to act as an advanced cable release for your camera. Dedicated leads plug into the headphone socket of the smartphone or tablet, with the other end connecting to the camera remote release socket. The apps then allow for long exposures to be programmed in, and they can even act as more advanced features, such as intervalometers. Both apps and hardware cost far less than dedicated intervalometers, and can do much more. See pages 86-87 for more.



# Third party landscape lenses

Whether you are just getting started, or are looking to fill a gap in your landscape lens line-up, there are some excellent third-party secondhand bargains to look out for. Here we look at some of the lenses that you should consider giving a place in your camera bag

## SIGMA 30MM F/1.4 EX DC HSM

£150-£220

It may recently have been replaced by an all-new model in Sigma's Art line, but the 30mm f/1.4 is still a very fine lens. It uses a Hyper Sonic Motor for silent autofocus, with full-time manual override available at any time. As is usual for Sigma's EX lenses, build quality is very good, and the lens is available for all SLR systems.

The 30mm is the only third-party, fast 'standard' prime for APS-C DSLRs, offering a 45mm equivalent angle of view. This gives a very natural perspective for landscape photography, though it may not be quite wide enough for expansive views. The fast aperture is good for low light shooting, and if you want to take scenic shots with a shallow depth of field. The f/1.4 aperture also means the lens is at its sharpest between f/4 and f/8.



## TAMRON SP AF 17-50MM F/2.8 XR DI II LD

£130-£180

Tamron's classic fast standard zoom has a good focal range for landscape photographers with APS-C DSLR cameras, with it being the equivalent of a 26-75mm lens. The lens has now been replaced by an image-stabilised version (at least in Canon and Nikon mounts), but it's still a great choice for APS-C DSLR owners looking for high-quality optics. The fast maximum aperture makes it especially useful for indoor or low-light shooting.

The 17-50mm was always a popular lens, and this means it's in plentiful supply on the secondhand market, which in turn keeps prices low. Nikon users should note that older lens models don't have a built-in autofocus motor.





## TAMRON SP AF 11-18MM F/4.5-5.6 DI II LD

£150-£200

Tamron was relatively late to the party in terms of making a wide zoom for APS-C DSLRs, and when it finally arrived, the 11-18mm f/4.5-5.6 looked decidedly underspecified compared to the competition. But this now makes it something of a secondhand bargain, and one of the cheapest wide zooms you can buy.

The 17-27mm equivalent zoom range is great for spectacular wideangle scenes, and it should make a good accompaniment to a more standard zoom. The maximum aperture is decidedly modest, but this shouldn't be an issue for landscape photographers shooting in good light and with a tripod. Stopping down to f/8-11 will give you the best image quality.



## TOKINA AT-X PRO DX 12-24MM F/4

£150-£260

A favourite amongst landscape photographers, the Tokina 12-24mm f/4 was one of the earliest wideangle zooms for APS-C DSLRs, and offers an 18-36mm equivalent angle of view (19-38mm on Canon SLRs). It's an extremely solidly made lens and features a focus clutch mechanism, whereby pulling the focus ring towards the camera engages manual mode. Nikon owners should note that only the later 'II' version has a built-in autofocus motor. Tokina has a strong reputation for making wideangle zooms, and the 12-24mm is impressively sharp at all settings. Its main weakness is quite strong chromatic aberration that's visible across much of the frame, but this can be substantially removed in post-processing.



# TAMRON 18-270MM F/3.5-6.3 DI II VC PZD

£160-£220

Although superzoom lenses can receive negative press for being jack-of-all-trades and masters of none, this shouldn't be the case. While the image quality may not match a fixed focal length wideangle lens, or a shorter zoom, the convenience of having one tucked in your camera bag makes them ideal for travelling. It allows you to take both wideangle shots and telephoto landscapes, without having to be weighed down carrying separate lenses, and the impressive Vibration Control image stabilisation means you may even be able to forgo a tripod in some situations. All of this means you can travel

light, making you more comfortable when out exploring your chosen landscape.

With an impressive 15x zoom, the Tamron 18-270mm f/3.5-6.3 Di II VC PZD is designed for APS-C-format DSLRs, where it is the equivalent of a 27-405mm lens on a full-frame sensor. With such a huge range, it can cover the vast majority of images you'd wish to take, and if you want to carry an additional lens we'd recommend a 50mm f/1.8 lens, for its sharpness and large aperture.

Best of all is the price. At between £160 and £220 it is affordable enough that every APS-C shooter should have one.



# SIGMA 105MM F/2.8 EX DG MACRO

£200-£270

Now replaced with an optically stabilised version, the older Sigma 105mm f/2.8 optic is still one of the best macro lenses you can buy, and one that we have used successfully in the AP studio for many years.

For landscape photographers the focal length makes it a good option for telephoto shots, allowing the photographer to pick out distant elements in a landscape.

The Sigma 105mm f/2.8 EX DG Macro lens is constructed of 11 elements in ten groups, giving its 460g body a solid feel. Its minimum focus distance of 31cm provides a true 1:1 macro magnification, and a good working distance for any budding macro photographer.

While the optical stabilisation of the new lens is useful, and it's good value at £400, if you get lucky you can find the previous 105mm f/2.8 macro lens for as little as half that price. In our test, we found that at the aperture settings most commonly used for landscape images, there is very little difference in sharpness between the old and new versions of this 105mm f/2.8 Macro lens.

# TAMRON SP AF 14MM F/2.8

£350-£400

A relatively rare lens, the Tamron 14mm f/2.8 is one of the widest-angle third-party optics ever made for full-frame DSLRs. It's a true rectilinear design, rather than a fisheye, which means straight lines towards the edge of the frame are rendered correctly.

Super-wide lenses such as this have always been pretty expensive, but the Tamron and its Sigma counterpart offer a much more affordable alternative to Canon and Nikon's own autofocus primes.

For landscape photographers it is about the widest lens you can get, at a very affordable price. However, you will want to ensure you have good foreground interest because distant subjects may be rendered very small in the overall image.





## TAMRON SP AF 17-35MM F/2.8-4 DI LD

£140-£250

The now-discontinued 17-35mm f/2.8-4 is Tamron's wideangle zoom designed for full-frame cameras, and combines a useful range with a fast maximum aperture at wideangle. It's available in Canon and Nikon mounts and is an interesting option for building up a set of full-frame lenses on a budget. The Nikon version doesn't have a built-in AF motor, but this isn't a problem since all Nikon's full-frame DSLRs have in-body focus motors.

A good alternative option is Sigma's similarly specified 17-35mm f/2.8-4 EX DG HSM. As demand for full-frame lenses is relatively low, both can be picked up for surprisingly low prices if you're patient and shop around.



## SIGMA 12- 24MM F/4.5-5.6 EX DG HSM

£270-£330

For landscape photographers a 12-24mm focal length is often the lens of choice, especially as it is a good accompaniment to a 24-70mm standard zoom. As such there are a number of different options on offer. However, when it was launched, the Sigma 12-24mm f/4.5-5.6 had the distinction of being the widest rectilinear zoom lens ever made for full-frame cameras. It offers a useful 18-36mm equivalent range on APS-C cameras – making it particularly attractive to photographers who use both formats – and a built-in HSM motor offers silent autofocus. However, at a hefty 600g, it's quite a bit bigger and bulkier than wideangle zooms designed for the smaller sensor size.

The lens has since been replaced with an all-new 'II' version that includes updated optics to reduce distortion and chromatic aberration.

Both models have built-in, non-removable lens hoods to protect their bulbous front elements.



# Photographing Landscapes with a Telephoto lens

Landscapes don't have to be taken with a wideangle lens. Try a telephoto optic instead

1







When greeted with a stunning vista, it is natural to reach for a wideangle lens to capture as much of the scene as possible. However, what we see in front of us often does not translate well to the photograph that has been captured. Images can look like a vast expanse of land and sky, with little to draw the viewer or command our full attention. This is because only the centre of our vision is actually in focus, so when we view a large scene our eyes flicker and focus back and forth. As we do this, our eyes piece together all the smaller elements that make up the scene.

For example, standing at the top of a hill looking down into a foggy valley, we may see a road meandering into woodland, the spire of a church breaking through the fog in the distance and a field full of cattle in the foreground. However, if this scene were captured using a wideangle lens, these elements may all appear relatively small and lack impact in the final image, giving a completely different impression to the scene we experienced when standing there.

Most landscape images are taken with a wideangle lens and these have (almost) led us to become conditioned to taking landscape images solely using these optics. But this can often lead to missed opportunities, or images that look like everybody else's. So, instead of automatically grabbing a wideangle lens, first consider whether there could be an opportunity to photograph the scene from a different angle.

Ask yourself if a particular scene would look better when photographed from further away or perhaps from a higher vantage point. If there is the opportunity to do so, try to use a telephoto lens rather than getting in close to a scene with a wideangle optic. As well as allowing smaller elements of a scene to be captured, the fact that you are standing further away from the subject also offers an entirely different perspective to the view found when using a wideangle lens. The idea isn't to completely replace a wideangle lens for landscape images, but to explore alternative views that may require the use of a telephoto optic. Hopefully, the result will be interesting images that would otherwise have gone unnoticed.

## FOCAL LENGTH

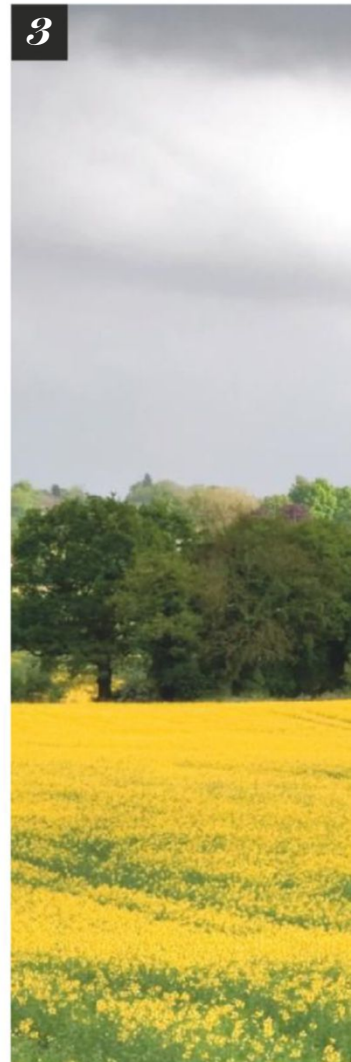
The area of human vision that is in focus is the equivalent of around a 43mm lens when used on a 35mm camera. Of course, we have peripheral vision, which is much wider, but this area of vision is unfocused. For the purposes of this article we are going to consider any focal length that



2



3



is wider than around 35mm as wideangle and anything greater than around 70mm as telephoto.

When photographing landscapes a telephoto zoom is ideal, allowing for flexibility as your location and the type of image you wish to take varies. A 70-200mm f/2.8 lens is suitable for most telephoto landscapes, and the f/2.8 aperture allows the depth of field to be shallow when needed. However, such lenses are expensive and a more affordable option would be a 70-300mm f/4-5.6 zoom optic. On a digital SLR with an APS-C-sized sensor, a 70-300mm lens is the equivalent of 105-450mm. At the maximum focal length this allows objects that are far in the distance to be made into the main subject of the image, while the 70mm focal length is wide enough for when you are closer to the main focus of the landscape.

A good compromise may be a 'superzoom' lens, such as the Sigma 18-250mm f/3.5-6.3 DC OS HSM or the Tamron 18-270mm f/3.5-6.3 Di II VC. Both of these lenses allow wideangle and telephoto landscape images to be taken,

The sweeping panoramic landscape on page 55 has some nice elements, but they are lost in the image. The three larger pictures above and on page 54 are all taken in exactly the same spot, but using a telephoto lens

making them ideal for most situations, particularly when you want to travel light. However, the image quality may not match that of a zoom lens with a more limited focal-length range.

## PERSPECTIVE

One of the main reasons for using a telephoto lens for a landscape image is to isolate a particular part of the scene. This can, of course, be done using a wideangle lens and getting in close to the subject, but this produces a very different look to the image as the perspective is altered.

It is not the focal length of a lens that changes the perspective of the image – all the focal length does is alter the angle of view and the magnification of the scene. It is the distance between the camera and subject that alters the perspective, and if you are standing further away, a larger focal length must be used to isolate the subject.

Imagine a scene with a tree just in front of you in the foreground and one in the distance. When you hold your hand up in front of you it appears relative in size to the tree in the foreground. However, perspective means that, despite being smaller, your hand appears to be much larger than the tree in the distance. Our eyes and brain are used to decoding and accounting for perspective as we go about our lives, but it is something we can experiment with when taking photographs.

The physical laws of perspective dictate that the further back the camera and lens are positioned, the smaller in size the subjects appear to become, but they become smaller in correlation to each other. Standing further back and using a telephoto lens means that the subjects in the scene will be

## TOP TIPS

**1** Stand further away and use a telephoto lens to isolate particular parts of a scene.

**2** Look for abstract patterns

and shapes in landscapes.

**3** Be creative with depth of field to draw attention to the subject.

**4** Use a tripod or monopod to support heavy lenses, or use a telephoto lens or camera with good image stabilisation.





more similarly proportioned with each other. If you get closer to the scene and capture it using a wideangle lens, the effects of perspective become far more apparent. The subjects closer to the lens appear far larger than those in the background. This is the same effect you see when you imagine holding your hand up and comparing it in size to a distant tree. So it is the distance of the camera from the subject that affects perspective rather than the lens itself (see diagram on page 22).

Most photographers are familiar with these rules, and instinctively will shoot very low to the ground with a wideangle lens to make an object appear to be very large in the image. However, the rule can also be reversed so that a telephoto lens is used to achieve a more relative sense of scale when photographing landscapes.

## DEPTH OF FIELD

When shooting landscape images, most photographers

## UV FILTERS

Traditionally, UV filters are used to cut out ultraviolet rays of light that are beyond the visible colour spectrum. However, while UV light may not be visible to the naked eye, photographic film and digital camera sensors are sensitive to it.

Ultraviolet filters are used in front of a camera lens to absorb UV light and prevent it from reaching the film or sensor. If it does, it can cause a haze and cool blue tint to appear in images, particularly in landscape images of distant scenes taken on bright, sunny days.

However, the need for UV filters has diminished in recent years. First, the coatings that are used on most



modern lenses dramatically reduce the amount of UV light entering the camera. Most modern digital SLRs also have filters that cut down on the amount of infrared and UV light hitting the sensor. This reduces the amount of UV light visible in images to virtually nothing, making the need for a UV filter a little redundant, unless you are in a location with a particularly strong level of UV light – at a very high altitude, for example.

There are a few older DSLR models that have particularly weak filters in front of their sensors, making them more susceptible to UV (and infrared) light. Some early DSLRs, particularly the Nikon D70, are known for having weak filters in front of their sensors, and so a UV lens filter may offer additional filtration depending on the particular lens being used on the camera.



Sometimes a landscape needs some foreground interest, so look out for rocks, plants, trees or wildlife that may balance the scene



try to get the maximum possible depth of field and sharpness across the frame. However, although using an extremely small aperture maximises depth of field, diffraction may cause a loss in image sharpness. Most lenses are at their sharpest around two aperture stops down from the maximum, which will usually fall somewhere between  $f/8$  and  $f/11$ , but depth of field may be limited at these aperture settings. The simplest solution is to use hyperfocal focusing. This method utilises the fact that an area in front and behind the actual focal point will be in focus. By adjusting the exact point of focus, the depth of field can be moved back and forth to maximise the area that is in focus in the image.

A general rule when taking portrait images is to use a

moderately large aperture to restrict the depth of field and concentrate focus on the subject. The same can also be done when taking landscape photographs. Instead of trying to get as much of the image in focus as possible, use a very large aperture to minimise the depth of field and isolate a subject so that it is the only thing that is in focus in the scene. When using a telephoto lens with a large maximum aperture, it becomes even easier to do this.

The fact that the subject in focus is further away than it would be when photographed with a wideangle lens means that it is easier to get much of the foreground completely blurred and out of focus. This is particularly true when a lens with a large  $f/2.8$  aperture, such as the Canon 70-200mm  $f/2.8$  L IS II, is being used. Conversely, focusing

## PERSPECTIVE

The closer the subject is to a lens, the greater and more exaggerated the effect of perspective. Using a telephoto lens and standing further away reduces this effect.

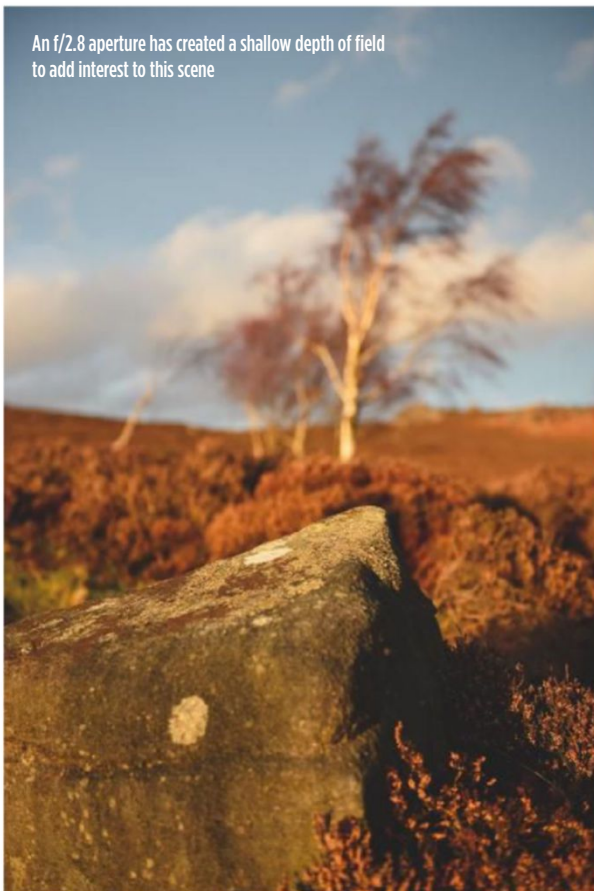




Fog and haze cause image saturation to decrease as the image fades into the distance. This can create interesting shapes and accentuate the foreground subject



An f/2.8 aperture has created a shallow depth of field to add interest to this scene



on the foreground when using a large aperture will render the background a complete blur. The shallow depth of field creates a feeling of depth in the image, while also drawing attention to a particular part of the scene by isolating it from the background.

## WHAT TO PHOTOGRAPH

As a telephoto lens allows distant subjects to be isolated, it offers the opportunity for a scene to be dissected into various elements. Unlike using a wideangle lens, you are looking to photograph smaller scenes instead of the entire view.

There are a few types of landscape scene that telephoto lenses are particularly well suited to, such as interlocking hills. As contrast is reduced the further away a subject is, ranges of hills become less distinct and less detailed the further away they are. The result is often a layered effect, where each shape of interlocked hill looks like a separate cardboard cut-out, like the background of an early cartoon animation.

Look for interesting shapes and patterns in the landscapes, and try to use the rule of thirds to frame key points. While shapes and patterns can be photographed to make abstract landscape images, often the landscape on its own is not going to be enough to make an interesting image, and a focal point is required. Buildings, trees, farm animals, rivers and lakes are all suitable subjects to make the focus of telephoto landscape images. Once again, use the rule of thirds to place these subjects appropriately in the image. Conversely, lines in crop fields, streams and avenues of trees can all be used as leading lines to draw the eye across a scene towards a subject.

You can use a number of different focal length zoom lenses to take telephoto landscapes



## SUPPORTING YOUR CAMERA AND LENS

When using a telephoto lens, remember that any slight movement is greatly exaggerated, so it is important to keep the camera and lens steady. Although most cameras and lenses now feature some form of image stabilisation, it is best to use a tripod or monopod for support, particularly if the lighting conditions are not perfect.

When mounting a camera on a tripod be sure to switch the image stabilisation off, as it can confuse the stabilisation system into making slight movements during the exposure.

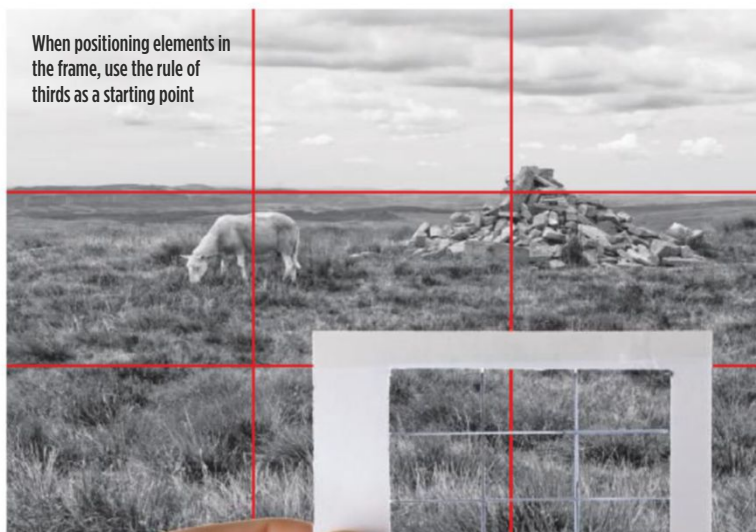
If you are fortunate enough to have a large, heavy telephoto lens with a large aperture, then it needs to be supported. Most large lenses have a collar to mount them on a tripod or monopod, but if not you can still support larger lenses using a beanbag. Simply remove the head from a tripod or monopod, place the beanbag on top and rest the lens on the beanbag. This should hold the camera and lens steady enough to avoid camera shake becoming a concern.

When using a telephoto lens unsupported, remember the rough rule that the shutter speed should be equal to the 35mm-equivalent focal length being used. So if a 200mm lens is being used on a camera with an APS-C-sized sensor, then the shutter speed should be around 1/300sec. Always err on the side of caution when using this rule, and remember to turn on in-camera or lens-based image stabilisation when shooting handheld.



# Composition

Once you have reached your chosen location, there is still work to be done before you click the shutter button and capture the scene



When positioning elements in the frame, use the rule of thirds as a starting point

Use a piece of acetate and divide it into nine equal areas. Then place it in a card frame to make a simple compositional aid

When cropping images and editing, consider the scene's key elements. Here, the 3:2 ratio strikes a nice balance between the foreground and the mountains

With your scene now in front of you, it is time to decide exactly how to compose your image. There are countless ways to do this, and it is up to the photographer to determine a suitable composition for the scene at that particular moment.

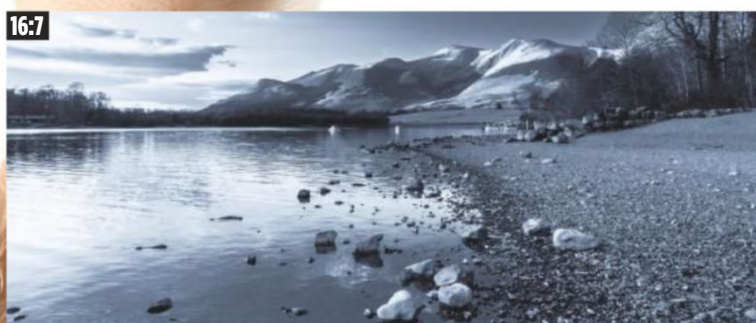
There are few rules when it comes to composition, although the rule of thirds is always a good starting point, but by breaking this rule you can sometimes produce some of the most striking images. Another similar method of composition is the Fibonacci curve. Like the rule of thirds, it places key compositional elements along certain points in the curve, and is meant to balance an image and draw in the viewer's eye.

Lone trees, a tractor or farm buildings can all be placed along the rule of thirds intersections to help balance an image and give the viewer a point on which to focus. Equally, placing an object in the centre of the frame can make it powerful and dominant, but it can also make it the complete focus of an image rather than the landscape itself.

Control where the viewer will look through leading lines. Winding country roads that cut through a scene, or the ploughed lines in a field, can be used to guide the viewer through an image. Leading lines can provide a sense of scale, which is important if your landscape is otherwise just blue skies and green grass.

The aspect ratio can make a huge difference to the look of an image. Again, there is no right or wrong format for a landscape photograph. Many of Ansel Adams' images are of a 5:4 ratio, while 3:2 and 4:3 aspect ratios are probably the most common today. However, there is nothing to stop you cropping to other, less traditional aspect ratios.

Although you will probably want to crop the image to a suitable aspect ratio using image-editing software rather than in-camera at the scene, it can be useful to know





roughly what you want your image to look like.

To help visualise this, it is possible to change the image format in-camera and then return it to its native aspect ratio before taking the image. Other photographers may use masking tape or card to cover part of the screen to help see their composition. Another trick is to use a series of small card frames with apertures of different aspect ratios cut out of them. Holding these in front of your eye will allow you to see roughly how an image will look, without even having to get your camera out of your bag.

With a camera bag carefully packed and a tripod in tow, it can take a few minutes to set up your equipment once you are in position. For all a tripod's good points, it can be restrictive when it comes to creatively exploring how to compose a scene. With this in mind, it is a good idea to work out the exact position from which to take an image before you set the tripod up. Once again, you can do this using small framing cards to compose the scene, or you can even use a small compact camera, but usually it is best to use your main camera and take some test images at different angles, heights and positions. Once you have found the height and angle you are most happy with, set up the tripod and lock the camera in position.

## HEIGHTS AND ANGLES

With your scene in front of you, it is tempting just to pull out your tripod and take all your images at eye-level, but this isn't always the best option. We are all used to seeing the world at this height, so by shooting from a lower or higher angle we can create something slightly more unusual, and often more eye-catching.

Shooting from above eye-level will often result in the camera being angled down slightly to capture the landscape. The result will be that more of the landscape, but less of the sky, is visible. Similarly, shooting from a low angle will reduce how much landscape is shown in the middle distance and draw attention to any subjects in the foreground. Think about how your shooting angle will draw attention to different parts of a scene.



LOW ANGLE



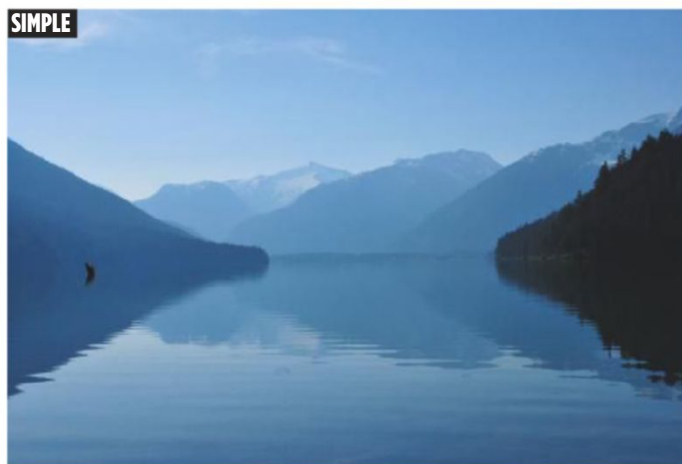
EYE-LEVEL

The height at which an image is taken can dramatically alter the look of the scene. Above, the shallow waves of the low-angle image draw the eye to the building

Remember that, as well as focusing your attention on one particular part of the scene, you can also avoid certain areas. For example, when faced with an amazing cloud formation made all the more dramatic by early evening sunlight bursting through, tilt the camera up to include more of the sky and less of the land. Conversely, avoid a dull, flat, overcast sky by not including it at all in your image. Instead, place the camera up high and shoot with it angled downwards.



A Fibonacci, or Golden Ratio, curve can be used to help compose images



SIMPLE



FOREGROUND

Light and shade can create simple graphic images, but including a foreground element can often help add interest and balance



# VISUALISE THE IMAGE

**Simon Butterworth**

Winner, Landscape Photographer of the Year 2012

To make an image on the camera, you are attempting to pull off a serious optical illusion by trying to represent a scene using only two dimensions instead of three. To help overcome this basic photographic problem, I try to visualise how the image will look on a flat piece of paper and how I can arrange the various available elements to give the impression of depth. The most obvious way is to include lines receding into the distance. This could range from railway tracks to much more subtle implied lines, such as two or three trees gradually getting smaller. Another effective method is to show objects becoming less clear as they recede into the distance, such as mountains gradually becoming hazy towards the horizon or telegraph poles disappearing into mist.

Forth Wind Farm, South  
Lanarkshire *Canon EOS 5D,  
16-35mm, 1/5sec at f/16,  
ISO 160*

# Composition tips from the pros

Practical tips from award-winning  
landscape photographers

Before you start photographing the fantastic views that you've discovered, spend a little time thinking about how you are going to compose your images. We've all returned home with images that don't live up to our expectations, so we've asked four experts for their tips on how to come back with those perfect photographs that will make all the hard work worth it.





Seacombe, Dorset *Canon EOS 5D Mark III, 21mm, 4secs at f/11, ISO 100, B+W polariser and Lee 0.75 ND grad*

## ADAPT TO THE CONDITIONS

**Andy Farrer**

Winner, Breathing Spaces, International Garden Photographer of the Year

We have all headed to a location with a preconceived notion of the shot we want to go home with, especially if it's a return visit to a location. But remember to adapt to changing conditions. For example, I often see people rooted to a strong composition that has a bland patch of sky who are oblivious to the colourful clouds behind them.

I find it useful to think of an image comprising two sets of parts – the permanent fixed parts and the moving parts. Keep an eye on the moving elements and change composition if you need to in order to make the best of the conditions that are there. Let go of your preconceived ideas.

In my image of Seacombe, Dorset (above), you can see the shape of the foreground channel echoed in the cloud formation above. This is not the foreground composition I was shooting before the cloud blew in, but it made maximum use of it.

## COMPOSITIONAL SIMPLICITY

**Tony Bennett LRPS**

Winner, Landscape Photographer of the Year 2013



What makes an image so striking that it holds our attention and embeds itself in our memory? Perhaps it's the raw emotional impact, such as seen in images by Sebastião Salgado, or the technical qualities in mono pictures by Ansel Adams. Although few of us can aspire to these levels of achievement we can take our image-making to the next level, and one way to do this is to use compositional simplicity – it never fails, whatever the genre.

In landscape photography, take time to study the features that are in front of you. Previsualise the final result by deciding on the essential element(s) in the scene. Walk around, as a few metres can change the

**Loch Etive, Argyll and Bute**

*Nikon D700, 28-85mm, 1/5sec at f/16, ISO 200*

view dramatically. Use a zoom lens to alter the framing, lower or raise the camera to add impact, try portrait format or wait for the light!

For this 'simple' image (above), I waited for the setting sun to go behind the hill on the right, knowing that the sky would be filled with gorgeous colours to set off the tree. Camera height and zoom framing were both critical to position the tree relative to the water and hills. I used a tripod for stability, and a geared head for compositional accuracy.



Dawn at Walberswick, Suffolk *Canon EOS 5D Mark II, 17-40mm, 2.5secs at f/8, ISO 200*

## CAPTURING WATER

**Justin Minns** Award-winning photographer specialising in dramatic landscapes

Capturing motion in water is a great way to add impact to seascapes and it's just a matter of selecting the right shutter speed.

If you select a speed that is too fast there won't be enough blur in the water to imply motion; if it's too slow too much detail will be lost. The ideal shutter speed will depend on the speed of the water, but between 1/3sec and 2secs is usually about right.

Although shutter speed is key with this

type of shot, I still prefer to use aperture priority, choosing an appropriate aperture and then adding ND filters or tweaking the ISO to adjust the shutter speed.

With the camera on a tripod, I fire the shutter using a cable release just as the water stops moving up the beach to catch the motion of it receding back down again – keeping an eye out for waves to avoid getting my feet wet!



# Sharper Landscapes

Once you have composed your shot, how do you make sure you get the sharpest image possible? Just follow our guide to get pin-sharp landscape photos





If there is one thing all photographers appreciate, it is extremely sharp pictures. The sharper the photo, the more the viewer can appreciate all of the fine details in the landscape.

Capturing pin-sharp images is neither difficult nor reliant on the use of lenses and cameras costing thousands of pounds. In fact, it largely comes down to the choices you make when setting up your camera prior to taking the shot. There is not just one secret trick, but a combination of methods that mean that you can leave a scene and walk away with as much detail as your camera and lens can possibly capture. You may be surprised by just what your kit is capable of.

## TRIPODS AND SUPPORT

Let's start with the obvious – a tripod is perhaps the best tool for making sure that an image is pin-sharp. While it can sometimes be a pain to carry around, the benefits of using one are huge. With the camera mounted on a sturdy tripod and head, there should be no camera movement during the exposure and virtually no excuse for the image to not be sharp. **If your tripod has a hook for a ballast, use this when shooting in windy conditions. Hook your camera bag, or a sandbag, to the tripod and make sure that the extra weight is just touching the floor. If it is left hanging then it can be caught in the wind and swing back and forth, causing the camera to be even more unsteady.**

However, it isn't just tripods that can

help steady your camera – monopods also offer a great deal of support. Although they are not as stable as a tripod, monopods can make a significant difference to the sharpness of your images. They offer support but with a degree of flexibility not found with a tripod.

**Another useful addition is a bean bag filled with rice, or similar. The extra weight can be hooked to a tripod for ballast, but they can also be used to support the camera if you can find a suitable wall or tree branch to rest it on. Another use is that a bean bag can be put on top of a camera to help reduce camera vibration either from a light wind or the camera's shutter.**





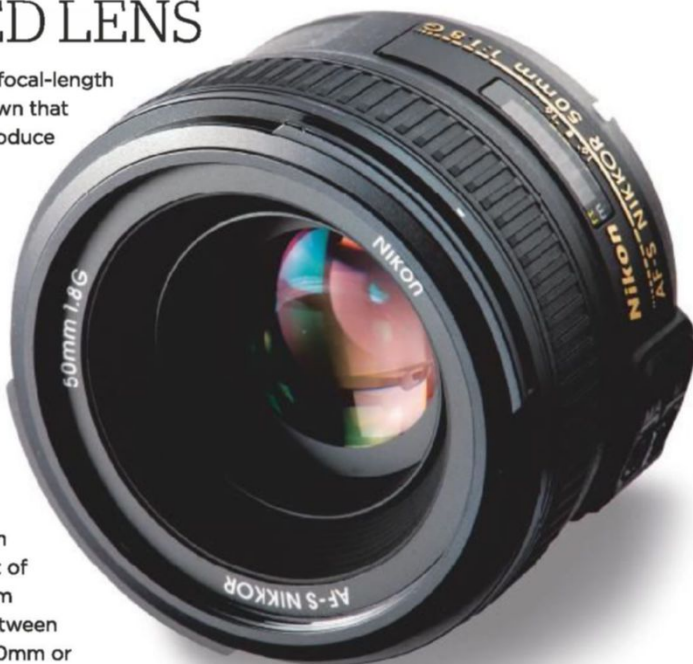
# USING A FIXED LENS

Wherever possible, try to use a fixed-focal-length lens rather than a zoom. It is well known that fixed-focal-length lenses generally produce sharper results than zoom optics.

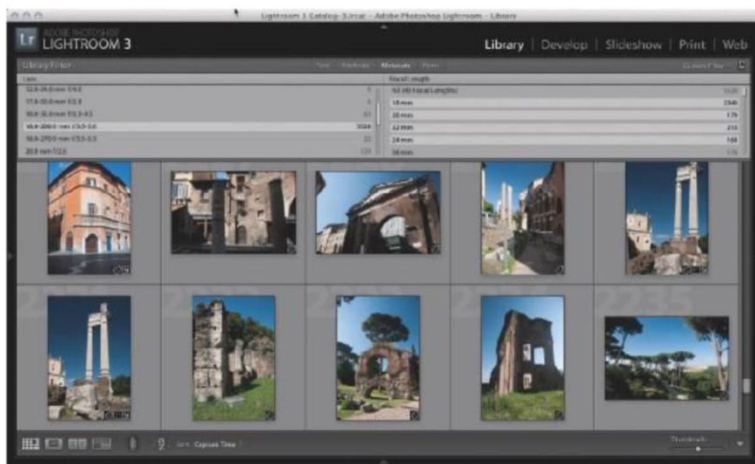
Replacing a zoom lens with a set of fixed-focal-length lenses can be an expensive endeavour, however before you shell out your hard-earned money, work out which focal length you actually use the most.

In image library software – such as the Organizer in Adobe Photoshop Elements, Lightroom, and Adobe Bridge – use the search filters and find all the images taken using a particular zoom lens. Then search through all of the images taken at each focal length. For example, out of 5,062 images taken with an 18-200mm superzoom lens, 2,450 were taken between 18mm and 24mm. So a fixed 18mm, 20mm or 24mm would be the ideal lens to cover these images, and would be a lot sharper and with less distortion than the zoom lens.

Fixed-focal-length lenses do not have to be expensive. Both Canon and Nikon offer 50mm f/1.8 optics at less than £200, and older, used AF versions can be found for around £100. And don't forget that old manual-focus lenses are also available for many camera systems. If your photography isn't reliant on fast focusing speeds, these can be extremely sharp and good value for money. A used 20mm lens may cost as little as £200, which is great if landscape images are your chosen genre.



A fixed lens will give you sharper images than a zoom lens. Work out which focal lengths you use the most and buy the corresponding fixed lens



## CHOOSE YOUR FOCAL LENGTH WISELY

Ok, not everyone has fixed-focal-length lenses, or you may only have your zoom lens with you when you stumble across the perfect landscape. Zoom lenses aren't as sharp as a prime lens, but this doesn't have to be a huge problem if you know how to get the most from the zoom lens.

Take the kit zoom and superzoom lenses of the 18-200mm variety. These are never going to be the sharpest lenses you can buy, but there are ways to maximise their performance. For instance, a zoom lens will usually perform the worst at its most extreme, so before you zoom all the way in, think about taking a few steps forward and using a focal length nearer to the middle of the zoom range. This slight adjustment can make a significant difference. It is similar story at the minimum focal length where a zoom will also show distortion. Here, you should zoom in just slightly and take a few steps backwards. Obviously this is all restricted by your physical location and how you wish to frame the scene.

Finding the focal length at which a zoom lens is sharpest is straightforward. Use a tripod to keep the camera steady and then simply photograph the same subject at different focal lengths, keeping the subject the same size in each frame. Now see which focal length produces the sharpest result.

Of course, the more you pay for a zoom lens, the better the image quality should be and, as lenses hold their value far better than cameras and can still be used when you upgrade, it is always worth buying the best you can afford.

## MANUAL FOCUS AND LIVE VIEW

We have all become reliant on autofocus, but it doesn't always get the best results, especially if you let the camera pick the AF point, or if you use the centre point and recompose technique. It may take a little bit longer, but manually selecting the focus point and then manually focusing will ensure that you get the main subject of your image as sharp as possible.

If your camera has live view take advantage of the magnification mode to zoom in as far as possible. This will allow you to make sure that you focus as precisely as possible.





# APERTURE

Aperture plays a vital role in the sharpness of an image. The rule of thumb is that a lens is at its sharpest when stopped down two stops from its widest aperture. Therefore, an f/2.8 lens should start to reach its sharpest at f/5.6.

When used with an aperture set to its maximum, lenses are more prone to suffering from distortions, chromatic aberrations, flare and coma, all of which have an adverse effect on sharpness. Conversely, diffraction starts to occur as an aperture becomes smaller. When the

aperture is very small, the light tends to bend as it exits the hole. These divergent rays have to travel further to reach the focus plane, which means they end up being slightly out of phase, resulting in a slight blurring. So while the effects of diffraction are often only slight, they can cause noticeable loss of detail.

To test which aperture is the sharpest on any given lens, aim the optic at a particularly detailed subject and lock the focus to this point. Now, in aperture priority mode, take the same image at every given aperture. By examining the results at 100%, you will see exactly which

aperture settings produce the sharpest image – these are usually between f/5.6 and f/11, depending on the lens.

It is worth considering this information when shooting landscapes, when generally you'll want to get as much of the image in focus as possible. While a small aperture of f/22 will increase the depth of field, it will also increase diffraction, which will reduce the image sharpness. Instead, use hyperfocal focusing (see later), where the aperture and point of focus are calculated, to maximise the depth of field and sharpness across as much of the image as possible.

## HYPERFOCAL FOCUSING

Focusing at the hyperfocal distance is useful as it maximises the depth of field at any given aperture.

At its simplest, this allows more of a scene from front-to-back to appear acceptably sharp at the aperture you're using. However, setting the hyperfocal distance can also be a way of utilising the 'best' aperture setting on a lens, allowing you to avoid the diffraction associated with the smallest apertures, so you get the best optical performance without sacrificing too much depth of field.

Basically, the hyperfocal distance is the distance at which everything from half that distance to infinity will appear acceptably sharp. So if the hyperfocal distance is 4 metres, everything from 2 metres to infinity would be covered by the depth of field if you focused at that point. Unfortunately, there's no single 'magic number' for hyperfocal distance: it is

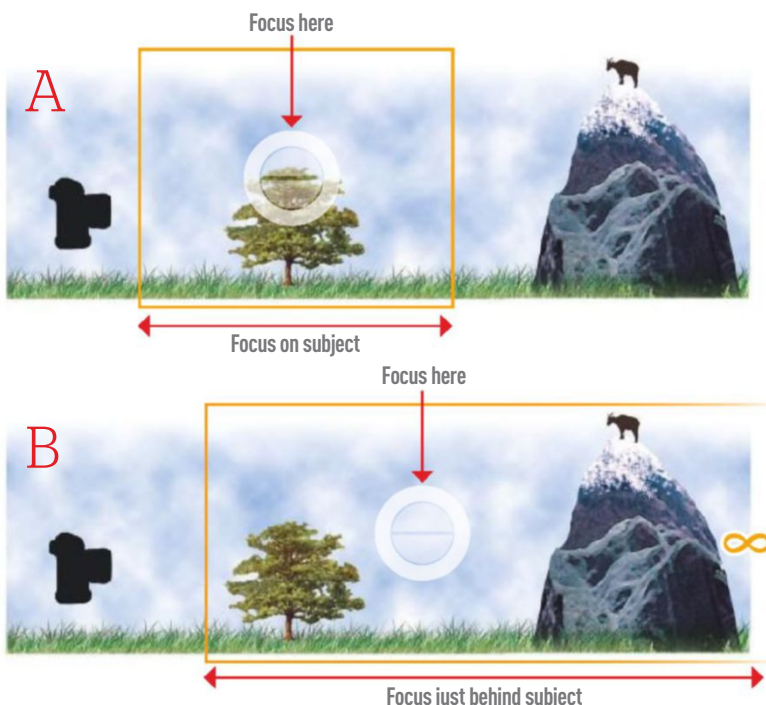
**A:** When focusing on the subject, in this case a tree, the depth of field extends in front of the tree and behind it, but not far enough for the distant mountain to be in focus

**B:** By focusing slightly further back, the tree is still in focus, but the depth of field has now extended to infinity, bringing the mountain in the background into focus

determined by a combination of the aperture setting being used, the focal length of the lens and the sensor (or film) size, so it can vary on a shot-to-shot basis. Thankfully, there is a wide range of online sources and apps that make it relatively straightforward to determine the hyperfocal distance.

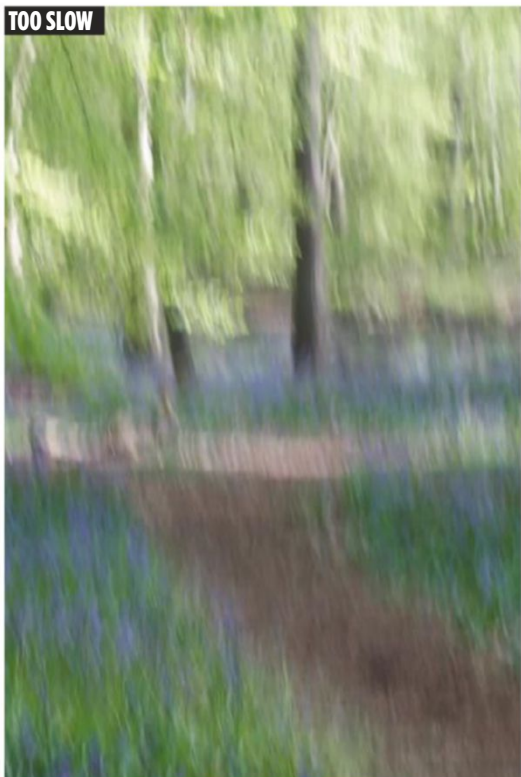
However, determining the hyperfocal distance is only half the battle: actually setting it in the field is much harder.

The main problem is that many modern lenses lack a depth-of-field scale and many also lack a useful focus-distance scale (if indeed they have a focus distance scale to start with). This is where a certain degree of 'guesstimation' comes into play. If the hyperfocal distance is 4 metres, for example, you need to locate an element in the scene that you think is roughly that far away from the camera position and focus on that (manual focus and a magnified live view image can help here). This may mean that your main subject doesn't appear sharp, but this is only because at this point the lens aperture will be fully open, and as such the depth of field will be quite shallow. However, assuming you've focused at the hyperfocal distance for the aperture, focal length and sensor size you're using, everything from half that distance to infinity will be covered by the depth of field.





TOO SLOW



CORRECT



## PICKING YOUR SHUTTER SPEED WHEN SHOOTING HANDHELD

Although using a tripod is ideal, there are times when you simply don't want to be weighed down with the extra load. In these situations it is vital to pick the correct shutter speed. Remember the basic rule – if you are shooting handheld you should always use a shutter speed at least as fast as the 35mm focal length. Therefore, if you are using a 50mm lens on a full-frame DSLR, you should use a shutter speed of 1/50sec or faster. If you are using a 50mm lens on a camera with an APS-C-sized sensor, then you should be using a shutter speed of at least 1/75sec (which takes the crop factor into account).

The choice of shutter speed should always be made in consideration of the aperture and sensitivity. If your aim is to get front to back sharpness then make sure you use the hyperfocal focus technique, and select the largest aperture that will get the front to back sharpness you need. Also don't be tempted to increase the sensitivity too much as this can add

noise and reduce the dynamic range. Stick to ISO 400 and below wherever possible.

Some people can hold the camera extremely steadily, but try to keep your shutter speed above 1/30th sec, when shooting handheld; 1/60th sec if you aren't so steady. Image stabilisation can certainly help, but in practice you will find that stabilisation should give you an extra stop or two to play with, so try to use 1/15th sec as an absolute minimum. Instead think of image stabilisation as a way to make extra sure your camera is going to be steady, rather than relying on it.

Oh, and breathe as you usually would. Don't hold your breath, because it can cause you to tense your muscles, which in turn can cause shake. Instead breathe and take your image as you breathe out. When you do this your body relaxes and isn't as tense, and you should find that your shots are sharper as a result. Give it a try.

## MIRROR LOCK-UP

There are a few things that are hard to avoid when you press a camera's shutter button. One is that you will inevitably move the camera slightly. The other is that the movement of the camera's mirror springing upwards will cause tiny vibrations.

One of the ways to avoid these movements is to use mirror lock-up mode. When available, this moves the mirror up when the shutter is pressed, with the shutter being released after a short delay or when the shutter is next pressed. This delay allows any vibrations or movements to settle. In taking these slight movements out of the equation, the resulting image should be slightly sharper.



## SHOOT RAW

Although the level of sharpening and noise reduction can be set to varying levels in-camera, it is always best to shoot raw images. When an image is saved as a JPEG file, it is compressed to save space, but this can cause a loss of detail sharpness. Capturing images as raw files and then using raw-conversion software to process them offers far more control over how sharpening and noise reduction are applied.

## ISO

You may not think so, but ISO sensitivity has some effect on sharpness because as the sensitivity increases so does luminance and chroma noise. These reduce detail, but not as much as noise reduction, which blurs and smooths image noise causing a loss of image sharpness in fine detailed areas.

Wherever possible, try to shoot at your camera's native ISO sensitivity, which is usually ISO 100 or 200. Doing so will mean the sensor and image processor will not have to amplify any analogue or digital signals – an action that can itself create image noise.

Similarly, avoid 'Lo' ISO settings. These generally just use the camera's native ISO sensitivity and then underexpose the image accordingly, before boosting the signal to produce a correct exposure. Generally, any image noise produced is very slight, but there can be less detail in highlight areas compared to using the camera's native ISO sensitivity.

Higher sensitivities also have less dynamic range, so you are liable to lose a lot of detail in shadow and highlight areas, which is not good when shooting landscape images, particularly those with a high contrast.



# USE A SELF-TIMER

If you don't have a remote release, the self-timer function can be just as useful. By setting the self-timer to fire a few seconds after you have pressed the shutter button, any force you may have applied to the camera when pressing the button will have subsided before the image is taken.

A self-timer becomes even more useful when

combined with mirror lock-up. This means that the mirror can spring up and then, when you press the camera's shutter button a second time, it will be a further few seconds before the shutter automatically opens. Once again, this means that the camera should be perfectly still and free from even the slightest shake.



## REMOTE RELEASE

For absolute precision, a remote release is key. Using a remote release means that a camera's shutter button doesn't have to be pressed at all. As a result, the camera won't be subject to any movements created when you press the button. Once again, when combined with a mirror lock-up and a tripod, a remote release should allow for pin-sharp pictures.



# SHARPENING

With some clever sharpening of your raw landscape image it is possible to reveal some of the more delicate details of a scene. By shooting raw you have complete control over the sharpening process when it comes to editing.

Most sharpening tools use an Unsharp Mask technique, which increases edge contrast to make them appear sharper. To successfully sharpen an image to its full potential, it is important to understand what each of the changes you make does.

Adobe Camera Raw has four sliders for sharpening, each performing a different task. While they may have slightly different names in other software packages, the basic functions are the same.

The Amount slider controls the strength of the sharpening, basically adjusting the contrast of edges to increase or decrease the effect.

The Radius slider determines the number of pixels from an edge that are affected by the sharpening. Setting this too high can create a halo effect around edges, so it is best to keep the Radius fairly low,

usually between around 0.5 and 2 pixels. Holding down the Alt key while moving the Radius slider shows a preview of which edges will be affected, highlighted in white. Grey areas remain unaffected.

The Detail slider is quite straightforward: it controls the degree to which details are sharpened. The higher the setting, the more fine edges are sharpened. When at a low setting, only the major outline edges will be affected, and not the smaller surface texture details. Again, holding the Alt key to see which edges will be affected.

Perhaps the most useful of the sharpening tools is the Masking slider. This masks those areas of the image that you don't want sharpened. When set to 0, no masking is applied, but when at 100 sharpening will only be applied to major edges. The masking slider is particularly useful in making sure that any luminance noise isn't made worse by the sharpening process. Hold down Alt and use the Masking slider to ensure that you only sharpen those edges that need it.





# Custom white balance

The way that colour is rendered is an important factor in creating an image, and the best way to achieve an accurate rendition of hues and tones is to set a custom white balance. We explain how

**H**ow colour is used in an image is crucial to its mood or 'feel', and it determines the viewer's emotional response to a picture. For instance, warm light from a sunset establishes the mood beautifully, while the vibrant colours of autumn leaves display the season in all its wonder. These colours are best shown by enhancing them, not muting them.

A portrait, however, can be ruined by an overly vivid and unflattering colour cast, which may give an incorrect skin tone. This can be disastrous for, say, fashion photographers, who need colours to be rendered accurately when they are attempting to capture the glories of the latest haute couture.

For all that, there is no single defining rule for 'accurate' colour when taking photographs. This is partly because human perception of colour is often inaccurate, as our brain makes adjustments for what we see. It is only when an extreme colour is detected that we notice something

looks out of place. This makes the accurate viewing of images on a camera difficult, especially given the various light sources that compete for our attention when we are looking at a camera screen.

Neither is a camera's white balance system (the means by which a digital camera makes the necessary adjustments to record colour) infallible. When set to auto, it too can be tricked, so even the very latest models cannot be relied on to get it right every time.

The best option for ensuring accurate control over colour is to set a custom white balance. In this article, we are going to explore white balance itself, investigate the methods of using custom white balance both on location and on the computer, and learn how to make creative use of colour.

## WHITE BALANCE

White balance systems in digital cameras are designed to ensure that the white tones in a scene are rendered accurately by removing colour casts created by the light source. Most cameras have several settings from which to choose, and these usually include auto white balance (AWB), around six presets, such as cloudy, flash and tungsten, a manual (Kelvin) setting and a custom setting. The AWB setting and presets cover a whole variety of light sources and provide a quick means of adjusting colour.





## AWB, PRESETS OR CUSTOM

I suspect most enthusiasts usually leave the camera set to AWB or rely on the presets – and why not? On the whole, these settings do a great job, whether on a compact camera or a DSLR. They are also the best options for high-pressure shoots when there is no time to fiddle with the settings.

The presets in a white balance system are set to a particular colour temperature. This makes each preset a great option when it matches a scene because it will not be swayed in ways that AWB can, which continually makes adjustments according to the light. Furthermore, a preset can be quickly selected in a high-pressure situation.

Where custom white balance has an advantage over AWB is that it allows us to choose a neutral-coloured object in the frame to act as a reference when creating an accurate colour rendition, according to the temperature of light. An AWB system does this job automatically, interpreting the scene as it sees fit.

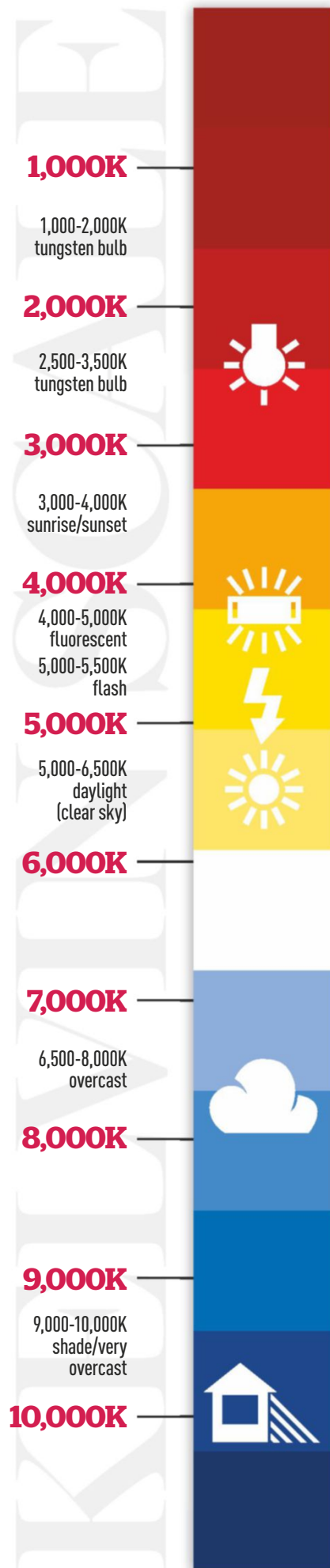
## CREATIVE COLOUR

AWB is typically neutral, so it removes colour casts to produce a neutral white. While custom white balance does the same, it enhances the colours in a scene rather than neutralising them. In both cases, though, the colours are

Top: The yellow leaves have tricked the auto white balance system, which has given the scene a cool colour cast to compensate

Above: The cool colour cast in this early morning scene is important to the 'feel' of the image

Right: The Kelvin scale shows the colour temperature in different situations, along with the camera presets





corrected. There may, however, be times when having the 'wrong' white balance gives a pleasant effect, and there are no hard-and-fast rules about this. Whatever looks good to the photographer in the way they want to convey the scene is best. Adding a warm cast is likely to make a pub on a winter's day seem invitingly cosy, while a cool cast provides a threatening atmosphere that isn't really possible with a neutral colour balance.

## WHERE THE AUTO SETTINGS GO WRONG

Auto white balance systems in compact cameras and DSLRs usually work well, although there are several situations in which the system can be thrown. For instance, when a particular colour is dominant in the frame – such as a bunch of red flowers, a green field or a plethora of yellow autumn leaves – the system may think this dominant colour is actually a colour cast, so AWB will adjust accordingly. For example, a scene dominated by green can typically have a magenta cast, which is at the opposite end of the colour spectrum.

A mixed light source can also present problems, such as light from inside a building mixed with the cool cast of outdoor evening light. With AWB, the user has no control over which light source is being balanced. Problems can also arise when taking the same image and adjusting the focal length or position, by switching to a panorama, say. This alters the content in the frame, which can cause the white balance to vary between images in a sequence.

As far as presets are concerned, they are great if they match the specific scene but even then there are variables. Using a tungsten setting under tungsten lighting is better

than sticking with AWB, but the sheer variety of tungsten bulbs and the temperature each emits, depending on how long they have been on, means that one setting does not cover all types. In these situations, other options must be considered and employed. The manual setting will allow the user to select the temperature (measured on the Kelvin scale), but this requires the user to have an accurate perception of the scene, and the eye is not always the most accurate of tools.

Time permitting, the best pre-capture option for any of these situations – and, in fact, in most circumstances – is to make a custom setting. Colour rendition is the most accurate because the custom setting works according to the exact temperature of light. Often the differences between custom and AWB are minimal and can be hard to perceive, but making the smallest change can mean the difference between getting the final result just right or not. It is not just a case of the right colour cast, but also the vibrancy.

## SHOOT RAW

It is best to shoot in raw format for several reasons, not least of which is the level of control it offers. Raw allows the white balance to be set post-capture using any one of the presets, AWB and even manual adjustment. Colour in a scene is also affected by the exposure, and raw gives greater control post-capture to adjust the exposure correctly.

That said, relying on the raw data and post-capture changes alone can mean time-consuming alterations, so it is better to get the balance right in the first place, and there are several ways to achieve this in-camera. Doing so even frees up the possibility of shooting JPEG only, provided that the exposure is correct.

# CUSTOM WHITE BALANCE ON LOCATION

Cameras usually record a custom white balance reading in one of two ways: from an existing file, or by taking a reading from a new exposure. Check the manual to find out how your camera records a custom white balance. The Nikon D300, which we used for most of the pictures in this article, uses an existing file.

Both methods require a neutral reference in the scene to record an accurate colour temperature. In the first method, simply select custom white balance in-camera and then choose the file with the neutral reference to take the reading from – the colour temperature will be set for the next capture. For the second option, select the custom setting and then take an exposure.

The best neutral reference for exposure and colour is middle 18% grey, angled towards the light source. The final temperature will be affected if the grey is any lighter or darker than this. If the correction method is via an in-camera custom white balance, the grey should ideally fill the greater part of the frame. If the method is via post-capture adjustments, the reference only needs to be placed in the most important part of the frame. In the



A grey card (left) is ideal for adjustments post-capture, while filling the frame with a grey card is ideal for in-camera changes

case of a landscape, this will be in front of a subject close to the camera. For a mixed light source, it is worth using multiple grey cards in different parts of the frame, then calculating a median temperature post-capture (see page 30). Failing a grey card, a white card is a good backup.

Once the information is gathered, the processing varies because each camera uses a different algorithm. This occurs even within the same brand, so there is no set way the camera produces the final result.

Both grey and white card options are good for correcting the balance of neutral colours. A full GretagMacbeth colour chart goes one step further by offering a full spectrum of 24 colours, covering a number of natural objects.



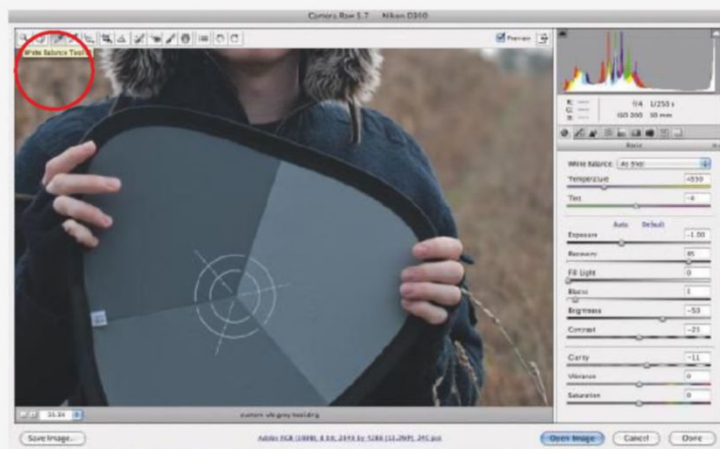
# CUSTOM WHITE BALANCE POST-CAPTURE

If an image has not been shot using a custom white balance, it is possible to correct it post-capture. Shooting raw will be particularly helpful for this, although all is not lost even with a JPEG file.

Creating a custom white balance post-capture is more time-consuming, although once a profile has been set up on one image, it can be applied to the remainder of the images that were shot under the same lighting conditions.

All raw correction software has the option to select the white balance setting from any one of the presets and AWB, as well as a manual Kelvin adjustment. This is achieved by the click of a button. However, while the temperature is changed, correcting the colour cast needs another step. The colour cast can be removed by adjusting the green/magenta shift on the slider, although this takes some time to produce accurate results.

In Adobe Camera Raw, a quicker option is to click on the White Balance picker tool (top left in the toolbar, see above right) and find a neutral reference in the frame – either an 18% grey card or a mid-grey object. After clicking on the neutral area, the white balance changes, with the colour of the grey itself affecting the final result. The information about colour temperature and 'tint'

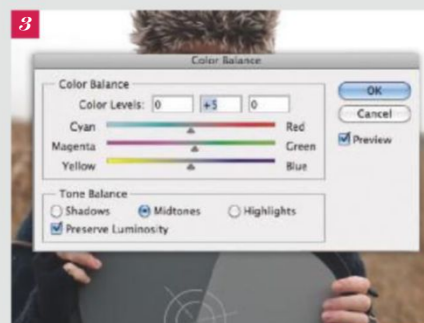
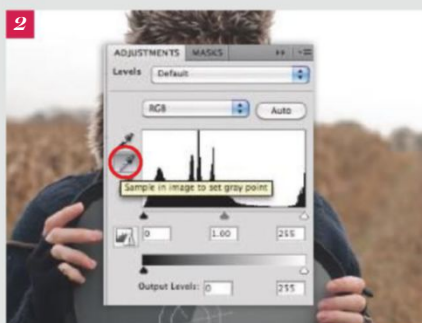
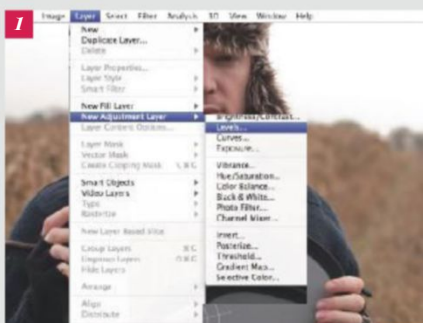


A grey reference point is essential for accurate white balance corrections

(green/ magenta) is indicated. When using multiple grey areas, make a note of each temperature and tint, and work out a median result. These results can then be applied to other raw files that were recorded under the same lighting conditions.

## RESCUING JPEGS

Like raw files, JPEGs can be opened in Adobe Camera Raw and adjusted using the White Balance picker tool. However, Photoshop and Photoshop Elements have tools to bring back the colour in a JPEG file, too

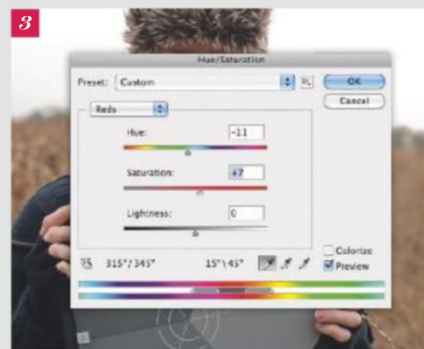
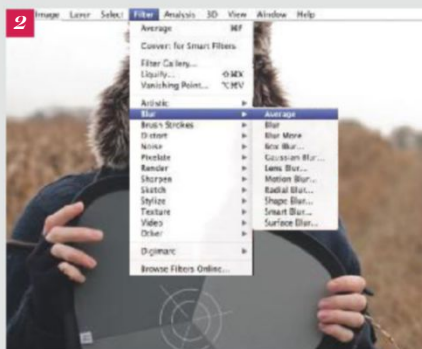
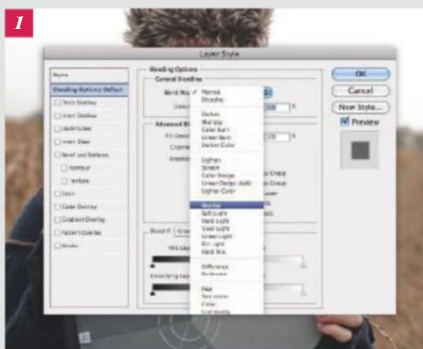


### TECHNIQUE ONE

Select Layer>New Adjustment Layer>Levels, set Mode to Normal and click OK. In Levels, click on the grey point

dropper and then click on the area that is supposed to be a mid-grey. If this doesn't look right, click on another grey area in the frame. For any minor tweaks, select

Image>Adjustments>Color Balance and tweak the sliders. This technique is unlikely to look right on every image. If the image still requires work, try technique two.



### TECHNIQUE TWO

Make a layer via a copy (Layer>New>Layer via Copy). Click on this layer and set the blending mode to Overlay. With

this layer still highlighted, click on Filter>Blur>Average and then Image>Adjustments>Invert. The colour will change and look a little muted. Next,

select Image>Adjustments>Hue/Saturation and add or remove saturation to taste. Then tweak the Hue slider for any final adjustments.





# Dynamic Range and Metering

We explain the concept of dynamic range: what it is, how it works and what effect it has on the images you take

**T**he term ‘dynamic range’ is used a lot in camera reviews and features. Along with image noise and resolution, it is one of the many considerations of enthusiast photographers when buying a camera, yet there is often little discussion as to what the term actually means and how it can affect the images you take.

Put very simply, the dynamic range of a camera is the range of tones that it can record between black and white. The larger the dynamic range, the more of these tones can be recorded and the more detail can be extracted from the highlight and shadow areas of a scene.

Dynamic range is usually measured in exposure values, or stops. For example, a camera with a dynamic range of 12EV would be one that could record all the details in a scene with a dynamic range of 12EV or less. Given the

same scene, a camera with a dynamic range of 10EV would not be able to record all the tones present, so detail would be lost in either highlights or shadows, depending on how the image is exposed.

Although it is certainly important to try to capture as many tones in a scene as possible, for most photographers the goal should actually be to try to create a pleasing image. This doesn’t mean that every last detail must be captured. For example, if both the highlight and shadow details in an image are grey, rather than black or white, then the image will be of very low contrast and rather dull and boring.

The key, therefore, is to understand the boundaries of your camera’s dynamic range and know how it can be used to create an image with a good level of contrast, but without large areas of complete black or white.

**Above Left:** Taken on a DSLR with an APS-C size sensor there is some detail in the highlight and shadow areas

**Above Right:** The same scene taken with a compact camera has blown out highlight areas and less shadow details

# WHAT THE CAMERA SEES

How light is captured by a camera's sensor, and what effect dynamic range has on the tones displayed

Each pixel in an image represents a single photodiode on the camera's sensor. The photodiodes collect light photons and turn them into an electrical charge, which is then converted to digital data. The more photons that are collected, the greater the electrical signal and the brighter the pixel in the image will be. If a photodiode does not collect any light photons, then no electrical signal will be created and the representative pixel will be black.

However, sensors come in a variety of different sizes and resolutions, and use different technologies that affect the size of photodiodes on each sensor. Typically, mobile phones and compact cameras have very small image sensors compared to a DSLR. This means they also have much smaller photodiodes on the sensor. So, even though both a compact camera and a DSLR may have a 16-million-pixel sensor, the dynamic range will be different.

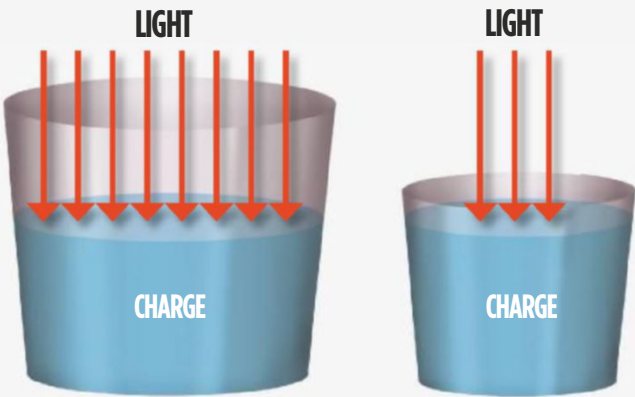
The most common analogy is that each photodiode is like a bucket that collects light. Imagine having 16 million buckets collecting light, compared to 16 million cups. The buckets have a greater capacity and as such can collect more light. The cups

have a much lower capacity, which, going back to the photodiodes, means that they reach capacity and produce a completely white pixel with a lower quantity of light photons than the larger photodiodes.

Where a small photodiode may reach capacity and produce a white pixel, the larger photodiode can continue collecting the light photons and may not reach capacity, which means it stands a better chance of retaining detail in the highlights rather than becoming completely white.

What this means in practice is that cameras with smaller sensors, such as smartphones and consumer compacts, have a smaller dynamic range than most compact system cameras or DSLRs, which use the larger sensors. However, it is important to remember that whether this will affect your images depends on the level of contrast in the scene you are photographing.

In a very low-contrast scene there may be little or no difference in the tonal range captured by a mobile phone and a DSLR. The sensors of both cameras may be capable of capturing the complete range of tones of the scene if all of the tones are in the mid-range and the scene is metered and exposed



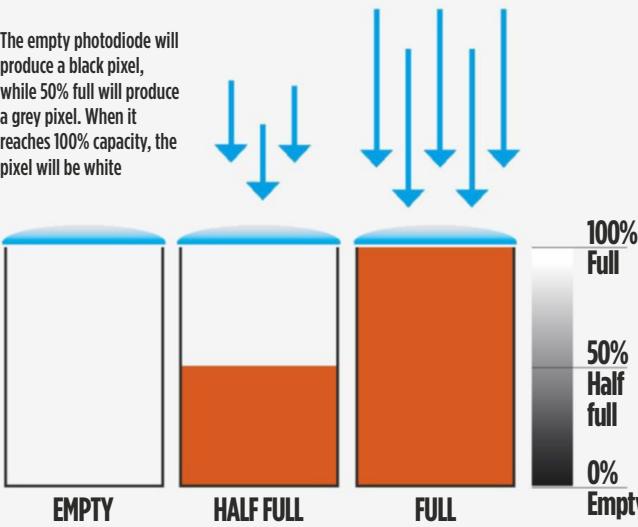
correctly. It is when shooting high-contrast scenes that the greater dynamic range that is generally provided by a larger sensor comes into its own. The larger photodiodes have better ability to record a wider range of tones, and thus have a greater dynamic range.

Above: The larger the photodiode, the greater its capacity to store light photons compared to a smaller photodiode on a smaller sensor. This means that the larger diode can better record details in highlight and shadow areas

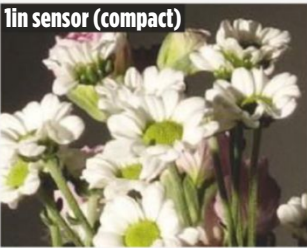


High-contrast scene

The empty photodiode will produce a black pixel, while 50% full will produce a grey pixel. When it reaches 100% capacity, the pixel will be white



APS-C sensor (DSLR)



1in sensor (compact)



1/3.2in sensor (phone)

In the highlights of this image, the APS-C-format DSLR retains highlight detail, whereas the camera-phone sensor does not





## METERING HIGHLIGHT AND SHADOWS

Most photographers rely on evaluative metering when shooting, and adjust the exposure compensation should the scene be too bright or too dark. However, as good as contemporary evaluative metering systems are, they are primarily designed to create pleasing photos straight from the camera, rather than images that record as much detail as possible, which can then be exploited using software. This often means that evaluative metering will blow out highlights for the sake of a large, evenly exposed foreground, or try to protect all the highlights, resulting in areas of significant underexposure.

Instead of using evaluative metering, switch the camera to spot. This will allow for the various highlight and shadow areas of an image to be measured precisely, and enable you to accurately meter the brightness range of the scene. By doing so, you can work out whether the camera's dynamic range will be able to cope with the scene, and if not, what the best compromise is when selecting exposure.

With the camera set to spot metering, point the metering spot at the brightest part of the image. If there are a number of bright areas, make sure you meter all of them to

find out which one is the brightest. It can help to have your camera in aperture priority at this point, as you may find it easier to work out the EV range. For example, at f/8 the highlight may meter 1/4000sec. Now measure the shadow area, which may be far darker, say, 1/15sec at f/8. This means there is an 8EV difference between the darkest and brightest exposures (1/30sec, 1/60sec, 1/125sec, 1/250sec, 1/500sec, 1/1000sec, 1/2000sec, 1/4000sec), which should be within the dynamic range of most contemporary cameras with large DSLR-sized sensors.

Taking the above example of Elizabeth Tower, if you pick the middle exposure (1/250sec), then the spot-metered values for the brightest and darkest points fall within  $\pm 4\text{EV}$  either side – within the JPEG dynamic range of most system cameras. However, the dynamic range doesn't always form an even spread from the midtone, so you need to work out how far you can push the exposure and still preserve highlight detail.

With careful metering you can find the perfect balance between highlights and shadows

### PRESERVING HIGHLIGHTS OR SHADOWS?

The dilemma you will face when dealing with a high-

## DYNAMIC RANGE: RAW AND JPEG



It is commonly stated that it is possible to recover blown-out highlight detail in raw files that is lost in JPEGs, but this is not technically true. If the photodiodes become full of photons then this detail is lost, regardless of whether you are shooting raw or JPEG files. What is different is how the dynamic range is represented. In a JPEG, the tonal range captured by the sensor is compressed into a smaller number of tones than is available in a raw file, which means that detail in the highlight and shadow areas of a JPEG is also compressed.

For example, a 12-bit raw image may have 4,096 different values per colour channel, while an 8-bit

contrast scene that goes beyond the dynamic range of your camera's sensor is whether to preserve the highlights or the shadows, and there are arguments for both.

Many modern sensors, particularly the fabled Sony IMX071 16-million-pixel model found in DSLRs such as the Sony Alpha 77, Nikon D7000 and Pentax K-5 II, are excellent at retaining detail in dark shadow areas. These areas can be edited to extreme levels, often with little or no noise being introduced. Knowing that such camera sensors can often recover shadow detail in raw images that may be invisible in a JPEG, it would be best to select the correct exposure for preserving the highlights. To do so, remember that the spot-meter reading for the highlight will reproduce it as a mid-grey tone, so as a general rule overexpose this reading by 2EV to produce a highlight that is just clipped.

In our example above, the metered reading of 1/4000sec will record the highlight as a midtone. This means that an increase of 3EV will make the exposure 1/500sec, which is 1 stop less than the 1/250sec that forms the midpoint between the highlights and shadows. The shorter 1/500sec exposure will result in the shadow areas also being 1 stop darker, and potentially the very darkest shadow areas becoming completely black, but you will generally want some black areas in an image. Remember that the aim should never be to create an image with no contrast, as some highlights and shadows are always desirable.

This will also leave the midtones a little bit darker, but when shooting raw images this can always be compensated for by the slight adjustment of Levels or Curves, particularly if you have a fairly current DSLR or compact system camera. As mentioned in Bit Depth Explained (see box, right), the camera's sensor is usually 12, 14 or even 16-bit, which means that it is capable of providing more detail in highlight and shadow areas than an 8-bit JPEG file. This doesn't change the dynamic range of a sensor, however. All it means is that the detail that is often lost, or at least looks lost, in JPEG images is actually still available in the raw file.

image has only 256. If the camera's processor divides the 4,096 different values and spreads them evenly across the 8-bit values in the JPEG file, then the top 16 values between 4,079 and 4,095 will all be compressed to a value of 255. When editing the raw image some of the compressed tones will be recoverable, but in the JPEG image darkening the white (255) highlights will only make them darker, rather than recovering the 16 tones from the original 12 bits of data. One of the most common occurrences of this compression effect is when editing sunset or sunrise shots. When trying to edit a JPEG image you can often see banding, or

posterisation, where the numerous original tones and hues have been compressed into a smaller range. Raw files, on the other hand, have a larger range to choose from, so banding becomes less of an issue.

When a raw file is edited and saved as a JPEG file, all we are doing is making a decision about the distribution of the 4,096 values in a raw file within the 256-value range of a JPEG, which is what the camera automatically does when it creates its own JPEGs. You can influence this distribution by using the various dynamic range optimisation modes that many cameras include.



The higher the bit depth of an image, the greater the range of tones that are used to create the image, as can be seen in the examples here

## BIT DEPTH EXPLAINED

Bit depth is closely related to dynamic range and dictates the number of tones that can be shown in an image. Although digital images are full colour, the sensor doesn't actually record colour, it just records a value for the amount of light. For example, a 1-bit image only contains a simple on or off instruction for each pixel, so in this case there are only two possible outcomes: a black or white pixel.

A 2-bit image is made up of four different levels (2x2). If both bits are on the pixel is white, if both are off then it is black, but there is also the possibility to have one on and one off, which creates another two options that in an image equates to two more tones. This gives you black and white, and two shades of grey. If you have a 4-bit image, there are 16 potential outcomes (2x2x2x2) or different tones.

When it comes to digital imaging and sensors, you will most commonly hear about 12, 14 and 16-bit sensors, each capable of recording 4,096, 16,384 and 65,536 tones respectively. The larger the bit-depth, the greater the potential number of brightness values, or tones, that can be recorded by the sensor.

However, not all cameras can produce files with the bit depth to match the sensor. For example, on some Nikon cameras it is possible to produce raw files as

either 12-bit or 14-bit. The extra data in the 14-bit files means that there is usually more detail in highlights and shadows, though the file size is larger and takes the camera longer to process and save, while also taking up more space on a memory card. Saving raw images as 12-bit files is faster, but the tonal range of the image must be compressed, which means that some very dark greys will appear as black and some light tones may become completely blown out to white.

If you shoot JPEGs, your images are compressed even more. JPEGs are 8-bit files made up of 256 brightness values, so many of the subtle details available for editing in raw files are completely lost in a JPEG file. Remember that in an 8-bit colour image, each pixel in the image is made up of a red, green and blue value, so there are 16,777,216 possible colours (256 x 256 x 256) for each pixel. However, a value of 0 or 255 for each colour will still only ever produce black or white. For example, 0,0,0 is black and 255, 255, 255 is white.

So, while JPEGs are fine for most uses, if you want to get the most from the dynamic range of your camera, save your images as raw files in the highest bit-depth possible. Thus you will have the greatest amount of information in highlight and shadow areas when it comes to editing.



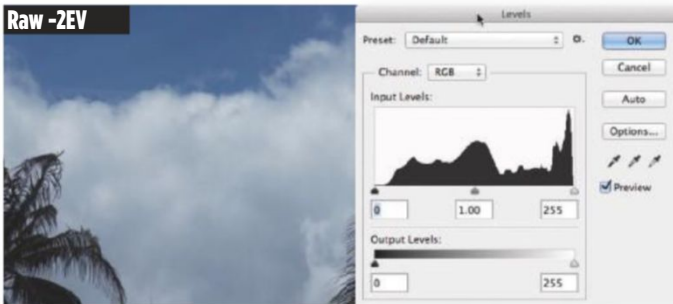
Raw



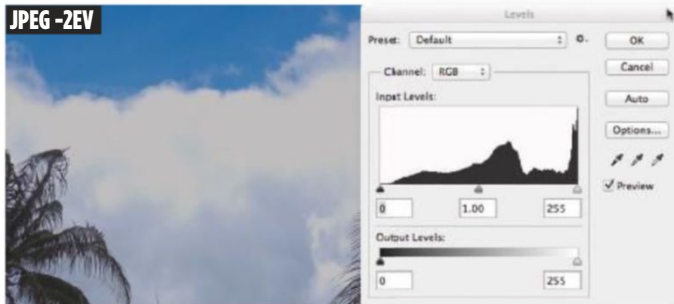
JPEG



Raw -2EV



JPEG -2EV



# Shooting to the right

There is an easy technique that will help you to greatly reduce image noise, or even eliminate it – let more light into your images

One of the main causes of image noise is too little light reaching the photodiodes of an image sensor. Therefore, the amount of noise in an image can be significantly reduced by increasing the amount of light reaching the sensor.

To increase the light you can either lengthen the exposure time or open the lens aperture. At this point, it is important to remember that the ISO sensitivity has no bearing on the issue. Unlike film, where the chemical formulation can be changed to make it more or less sensitive to light, a digital sensor has a base sensitivity that never changes. All that happens when changing a camera's ISO sensitivity is that either the analogue or digital signal produced by the sensor is boosted – the sensitivity of the sensor remains the same.

Raising the ISO sensitivity of a digital camera actually causes the sensor to receive less light, as the metering compensates for the increase by reducing the exposure required. When shooting film, this wouldn't matter as the sensitivity of the film would compensate, but with a digital sensor, boosting the signal also increases the underlying electronic noise caused by the sensor. This reduces the signal-to-noise ratio, which causes the noise to become more apparent. This is why it becomes more visible as the ISO setting increases.

## SHOOTING TO THE RIGHT

You may have heard the expression 'shoot to the right'. In short, 'the right' refers to the right-hand side of a histogram. In other words, you are increasing the exposure to brighten the image, grouping the tones at the right-hand side of the histogram. This means that the shadows and midtones are also brightened, and it is these areas that are prone to noise.

The trick is to increase the exposure as much as is possible without blowing out highlight detail, or at least

While the JPEG image has blown-out highlights, as shown by the histogram, the raw image doesn't

making sure that minimal detail is lost. While a simple increase in exposure by around 0.7-2EV should be ample, it does, of course, depend on the scene. The best method of achieving this kind of exposure is to use the histogram display on the camera's rear screen, and increase the exposure so that the curve is to the right of the graph but not completely bunched up towards the end.

Even with the exposure pushed to the right in this way, it is still beneficial to capture a  $\pm 0.3\text{EV}$  bracketed set of images. This is because most cameras will base the histogram on the JPEG image, or the JPEG preview image contained within a raw file, rather than the raw file itself. It is therefore important to shoot in raw capture so you can squeeze the most detail from the scene. Also, select the largest bit depth possible for your raw images (Nikon cameras, for instance, often have the option of 14-bit raw files, as well as 12-bit). Basically, when you shoot raw images, you will usually have more leeway in the highlights than the histogram (and the camera's highlight clipping feature) may indicate. Therefore, if the histogram is on the verge of bunching up at the right-hand side, don't be scared of pushing it just a bit further.

### EDITING THE IMAGES

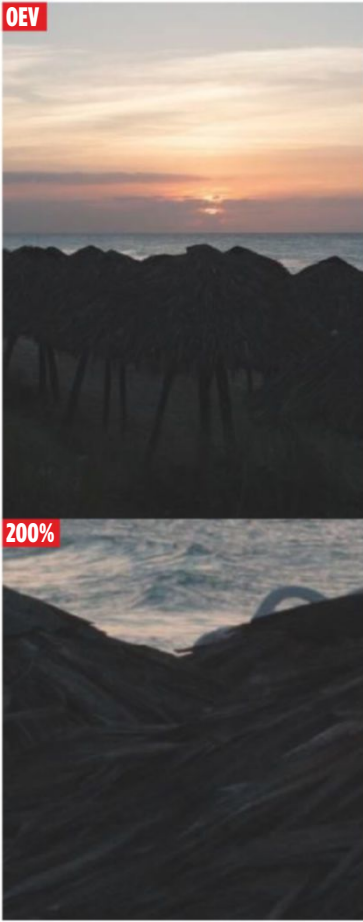
With the exposure pushed as far to the right of the histogram as possible without clipping the highlights, the highlights and midtones will almost certainly be too bright and look overexposed. As this technique is designed for raw images, this is not a problem. The purpose is to brighten shadows to reduce noise, while making sure there is detail in the rest of the image that can be easily recovered with raw conversion software.

When editing the raw image, the first step is to reduce the exposure for the highlights. In Adobe Camera Raw, use the Highlights recovery slider to do this. Move the slider to the left to tone down the very brightest parts of the image, but not so much that the highlights become midtones. Similarly, the midtones may also need darkening slightly, which can be done by selecting the Tone Curve tab and then moving the Lights slider to the left.

As the brightness of the image has largely been reduced, the noise in the highlights and midtones should be far less noticeable, if visible at all. The shadows may still need to

be lightened to bring out detail. However, as a brighter exposure has been used, less noise will be visible than if the image had been exposed with a default setting. Conversely, shadow areas may be quite bright, so they will need darkening. By darkening the shadows, any noise visible in these areas will also be hidden.

So the next time you are taking an image that might be susceptible to noise, make the exposure as bright as you possibly can without causing large blown-out areas of white. The increased exposure, and the darkening of the image post-capture, will help to keep noise to a minimum, for smoother, cleaner images.



Brightening an image taken with the camera's default metered exposure reveals noise in the shadow areas



Increasing the exposure just 1EV still retains detail in the highlights, but much less noise is revealed in the edited image

## TOP TIPS

- 1 Always capture raw images at the best bit depth available on your camera
- 2 The in-camera histogram is only a guide
- 3 An increase in exposure of just 1EV can make a significant difference to the amount of noise
- 4 Use your raw-conversion software's highlight recovery slider to pull back highlight detail







# Three filters you can't live without

Despite the powers of Photoshop, there's still an essential place for filters in your kit bag, as Jeremy Walker reveals

So it's the 21st century and we are still putting pieces of plastic in front of cameras and lenses that cost millions of pounds to design and develop. Really? Surely it's possible to do everything in-camera or in post-production and there's absolutely no need for filters whatsoever? Yeah, right!

There is a time and a place for modern electronic wizardry, either in-camera or in programs such as Photoshop, but I am a firm believer in getting it right at the time of taking. Why go out on location knowing you could shoot and get the image right, but then decide, 'I'll do that later on the computer'?

I spend far too much time sitting in my office staring at a computer screen, thank you very much, so for me, going out on location, getting the shot and getting it right first time is a very satisfying experience.

That is not to say there is absolutely no place for pure electronics – the two methods can sit side-by-side – but I think there is a look and feel to an image where light is being transmitted through an optical surface, rather than something being invented out of a series of noughts and ones.

So I need to load my camera bag up with hundreds of expensive filters then, do I? Simply put, no. There are two main types of filter: the glass screw-in, and the 'system', whereby one size of filter will fit many different diameter lenses via a universal holder and a removable adapter ring, which is an incredibly flexible and versatile system. The glass screw-in type has severe limitations, and if you have many lenses with different filter threads, you'll need a filter for each.

When I talk about filters, I am in fact referring to the system-type holder and, in particular, the Lee Filters 100mm system. I have been using this system for nearly 20 years because the optical quality of the filters is second to none – in fact, the filters will be as good as the glass used in your lens. Also, the filters are constructed not from plastic but optical resin made by the filter manufacturer itself to an incredibly high standard.

There are three main filter types that I would consider to be essential – some technical to correct or balance exposure, and some for creative effect. Read on to see which filters these are.



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ITEMS  
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### ACCESSORIES

Ball Head Heaven – set the preferred friction and lock in place. Once the desired friction is set the camera can be moved by a little extra pressure in any direction and from horizontal to vertical. The friction resistance remains constant, reliable and smooth and will not let the camera move on its own. It is oh, so easy.



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**212  
ITEMS  
IN STOCK**



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**50  
ITEMS  
IN STOCK**



**46  
ITEMS  
IN STOCK**

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**81  
ITEMS  
IN STOCK**

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**781  
ITEMS  
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ITEMS  
IN STOCK**



**54  
ITEMS  
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## KIT LIST



### LEE FILTERS LANDSCAPE POLARISER FILTER £175

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### HOYA PRO1 POLARISER SLIM FILTER FROM £34 (40.5MM)

A multicoated filter to reduce lens flare, while the low profile reduces the risk of vignetting.



### TIFFEN CIRCULAR POLARISING FILTER FROM £30 (52MM)

A good affordable option to control colour and contrast.



# Polarisers

Remove reflections and boost colour saturation

There are two types of polariser: linear and circular. We are interested in the circular polariser, but just to make your life complicated, did you know you can have a square circular polariser, too?

The term circular polariser does not refer to its physical shape, but to the way in which the light is polarised – in a circular motion. Linear polarisers have a habit of messing up autofocus and metering, so you should stick to the circular type.

## DO YOU NEED A POLARISER?

A polariser has a couple of very important functions. First, it reduces reflections on surfaces such as water, metal, glass and even foliage, and second, it increases colour saturation and contrast – particularly noticeable when you have blue skies and fluffy white clouds in an image.

Autofocus and metering are both possible through the polariser once it is on the camera. The polariser can be freely rotated on its own ring to bring it to the point of maximum polarisation, which is visible through the viewfinder or live view. However, the polariser works best when you are viewing your scene at 90° to the sun, so that your subject is cross-lit. If you are shooting into the light, the polariser will have little or no effect.

A bad habit to get into is just leaving the polariser on your lens all the time – use it only when it's necessary. The polariser can also be used in conjunction with other filters, such as neutral density filters and grads.

## BAD HABITS

Another bad habit that many people fall into is using a polariser on a wideangle lens. If the lens is too wide, then you will end up with blotchy, uneven skies going from light blue to dark and back to light again, leaving a dark patch in the sky. This is because the polariser can only polarise light up to a maximum angle, and when the lens is wider than this angle it causes the uneven appearance of the sky. Try looking at images shot on lenses wider than 35mm and see how the sky reacts to the polariser – you will see that at 24mm it will become very noticeable.

Polarisers are usually neutral in colour, but some come with a subtle colour tint or tone. Avoid polarisers that create garish colours like gold and purple or blue and yellow. These are fun once or twice, but on the whole they are to be avoided.

In my bag I pack a polariser, a few grads and a couple of neutral density filters – these are invaluable and will go a long way to helping you improve your photography.



WITH FILTER



WITHOUT FILTER

A polariser can cut out unwanted reflections and boost both contrast and colour saturation in a scene



# Graduated neutral density filters

Balance the foreground and sky for perfect landscapes taken in-camera

WITH FILTER



WITHOUT FILTER



Above left: A soft ND grad was used to provide a smooth transition, avoiding a divide that can happen with a hard grad

Above right: Without the soft ND grad the top of the frame has lost detail, thus unsettling the image

If I could only travel the world with one filter this would be it: a 2-stop, hard-edge neutral density graduated filter – or, as they are more commonly known, an ND grad.

An ND grad is a filter that is clear in the lower half and fades or gradates into a darker tone nearer the top. The dark tone of the filter is neutral (or at least, it is in the better-quality filters) and should not affect the colour of the final image. The gradation can be varied so the fade from light to

dark can be either very subtle or quite strong, known as soft or hard-edge grads respectively. The ND grad is used for controlling the exposure difference between foreground and sky, with the sky usually being the brightest part of the image. If no filter is used and you just point the camera at the view, the camera's meter will invariably be fooled by the brightness of the sky and you will have a perfectly exposed sky and a dark or underexposed foreground. By metering for

## USING AN ND GRAD



### 1 COMPOSE AND METER

The first thing to do is to frame your image so you know what foreground and sky is going to be included in the frame. With that done, meter for the foreground by pointing the camera downwards, without using the filter and in manual metering mode, and note the reading.



### 2 SET THE EXPOSURE

Now meter for the sky, again with no filter, and note the reading. To work out the difference in exposure between the foreground and sky, compare the difference in shutter speeds. If the first reading is 1/60sec at f/11 and the second is 1/250sec at f/11, the difference is 2 stops.



### 3 SHOOT

Shoot a test frame at the first reading – the foreground should be perfectly exposed and the sky overexposed by 2 stops. Now slide a 2-stop (or 0.6 in Lee terms) hard-edge grad down to the horizon line and shoot another frame. You should end up with a perfectly exposed frame.



#### WITH FILTER

With a defined horizon, a hard ND grad is more appropriate



#### WITHOUT FILTER

Without an ND grad attached, detail has been lost in the highlights



the foreground the opposite will happen, leaving you with a perfectly exposed foreground and a sky that is overexposed. By placing the dark area of the grad over the sky and the clear portion over the foreground, you will balance the exposure between the two. The filter can be moved up or down independently of other filters in the holder, so that the gradation sits on the horizon or in another appropriate position for the shot.

### LIGHT LEVELS

It really is as simple as that, although there are some variables, such as just how bright the sky is. A clear-blue sky is going to require a different exposure from hazy cloud, which will be yet a different exposure from cloud that is backlit by the sun. To counter these variables, ND grads come in

different strengths measured in whole or half stops, from 1EV through to at least 4EV, and can also be used with other filters.

Working out the exposure difference between the sky and foreground is very easy: just point your meter at one and take a reading, then point the meter at the other and take another reading, then look at the difference in shutter speed or aperture. A more difficult decision is whether to use a hard grad or a soft grad, but as a general rule of thumb hard grads are for landscapes where the horizon is relatively flat and uninterrupted, while soft grads are for images where things may break the horizon, such as trees. This is just a rough guide and some experimentation will be needed, but once you know your filters, you could even combine soft and hard grads to feather the area of gradation.

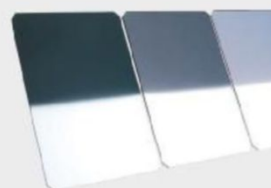
## KIT LIST



### LEE FILTERS DIGITAL SLR STARTER KIT

£199

This contains an assembled filter holder, a 0.6 (2-stop) hard-edge ND grad, a cleaning cloth, and a Tri-Pouch, as well as a ProGlass 0.6 ND filter (see over the page for more details). Adapter ring extra.



### FORMATT HITECH ND GRAD HARD EDGE FILTER KIT £109

Comprising 0.3 (1-stop), 0.6 (2-stop) and 0.9 (3-stop) hard-edge ND grad filters, you'll need the dedicated 100 Modular Filter Holder (£45) and adapter ring (price depends on lens).



### COKIN H250A ND GRADUATED FILTER KIT £39

This contains a P-Series filter holder and a set of three graduated filters of varying strengths (you'll need to buy a separate adapter ring).



# Neutral density filters

For extended exposures and creative effects, the ND filter offers all you need

**N**eutral density (ND) filters are often easily confused with ND grads, but the difference is very simple. A neutral density graduated filter has a clear area that graduates into a darker tone in the upper portion of the filter and exposure is only affected where the tone is dark. A neutral density filter has the dark tone covering the entire filter and will affect the whole image.

So why should you shoot with a neutral density

filter? Neutral density filters are used to increase the length of the exposure for artistic effect, to emphasise movement or motion blur. How much blur depends on the strength of the filter, which you will find are most commonly available in 3, 6 and 10-stop strengths (see below). Neutral density filters can also be used in combination with ND grads, to darken a sky and increase the overall exposure. For more on using ND filters for long-exposure images see pages 67-71.



## 3 STOPS

A 3-stop filter will increase the length of exposure by, as the name suggests, 3 stops. This will allow you to introduce a hint of creative blur or motion, but still allow you to record some detail in the subject. You can meter directly through the filter and AF will work. They are useful for shooting city scenes with people in or moving water, when just a hint of blur is needed.

## 6 STOPS

These are useful for increased amounts of blur and motion, such as for silky waterfalls, flowing rivers and smoothing out crashing waves. Again, the autofocus and metering will work through the filter, but you'll find that composing the image is a lot easier without the filter in place. The viewfinder should also be covered to prevent light from entering the prism and mirror box, resulting in a pale magenta patch on the final image.



## 10 STOPS

You can increase your exposure by a whopping 10 stops for some really cool special effects. For instance, a meter reading that indicates 1sec at f/11 will change to 17mins with a 10-stop ND filter attached. Anything that moves in your image will blur – waves, rivers, people, clouds – while exposures of several minutes can easily be achieved in bright conditions. Needless to say, you will need a sturdy tripod and a lot of patience.

## KIT LIST



### LEE FILTERS BIG STOPPER

£100

Designed for Lee Filters' 100mm filter system, this has proved incredibly popular. A smaller version is available for the Seven5 system for smaller cameras.



### B+W 110 ND FROM £70 (58MM)

B+W's circular 10-stop ND filter is available in a range of filter sizes.



### TIFFEN VARIABLE NEUTRAL DENSITY FILTER FROM £100 (58MM)

This provides a variable 2 to 8 stops of light control, affording the convenience of using several ND filters.

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CHARGE TIME	2h
POWER	0,8w - 20w
COLOUR TEMPERATURE	3200-5600K
ILLUMINATION ANGLE	60°
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ADVANCED

Gorgeous light and a long exposure help to deliver a striking mono image



# B&W Landscapes

Ian Bramham explores the way that shooting in mono can evoke feelings and emotions that are infinitely harder to capture in colour

**L**andscape photography is very wide ranging, encompassing everything from industrial and urban cityscapes through to the more traditional rural and coastal scenes. There is something for everyone.

The UK and Europe are both densely populated, and as a photographer I am fascinated by the way in which elements of the natural and man-made environment often merge to produce a landscape that shows our human influence stretching back through the generations.

## EXPRESSION

What is it that raises the level of some landscape photographs to that of art? For me, it is when the photographer has a strength and clarity of vision, and is able to express that vision through their work to evoke feelings and emotions. Arguably, the greatest landscape photographer was Ansel Adams, who described successful landscape photography as 'all a matter of feeling'. In fact, he went as far as to say that a great photograph should be 'a true expression of what one feels about life in its entirety'.

Like many photographers working in black & white, Ansel Adams believed that the medium offered him a much greater opportunity than colour to express his feelings and emotions. Without the obvious distraction of colour, black & white photography allows us to get closer

to being able to show the real essence and inner beauty of the subject of our photographs.

## LESS IS MORE

When I first became interested in photography, I spent the first year or so taking photos that were little more than snapshots. I was really struggling to take shots that had any artistic merit. Gradually, however, I evolved a simpler and simpler approach to composing my photos in the viewfinder that had the effect of strengthening their impact by making them less cluttered and messy. It also had the happy side effect of making it easier to get good balance across the differing elements.

For any of you who may be struggling to achieve simple but strong composition in your photos, I've found that it helps if you think of composition as a reductive process rather than an additive one. In other words, the next time that you have your eye at the viewfinder, instead of asking yourself what you want to include in the frame, try asking yourself what you can exclude from the frame, to make it simpler and more direct. We live in a fast-moving and complex world, yet I derive great enjoyment and a fantastic sense of inner peace when I'm out with my camera taking simple and harmonious photographs.

## BALANCE AND HARMONY

Even for beginners, the subject of visual balance in the composition of landscape photos is a relatively straightforward concept to get to grips with, and achieving it is made a lot easier using simple principles. For successful black & white landscape photography, however,

This classically arranged composition delivers balance to the scene



the issue of balance goes much further than just good visual composition – there are additional types of balance that should be considered.

For example, you can compose your photos so that the elements in the frame not only achieve a visual balance, but also reveal a significant ‘emotional’ relationship with each other. An example of this is my photograph of Fiddlers Ferry Power Station in Cheshire (previous page), showing the power station and the dead tree. The composition is classically arranged with foreground and background elements balancing each other visually. However, the relationship between the coal-fired power station and the dead tree intentionally goes beyond the simple foreground/background relationship of classical

Something as simple as birds flying across a scene can create the perfect addition to a monochrome sky



landscape photography. Another important issue in mono landscape photography is that the overall balance of light and dark tones within the photo is crucial to its success. Achieving this type of balance requires experience and is usually a blend of good initial composition, combined with a personal vision of what you want to achieve in post-processing.

## BEAUTY IN IMPERFECTION

The fact that beauty can be found in imperfection is perhaps a controversial view, but I believe the advent of digital technology has made it too easy for us to produce photos that are ‘perfect’, without any kind of visible flaw. As a result, this quest for perfection can often result in

photos that feel soulless and lack personality.

Don’t get me wrong, though, as I love my digital camera and I love the ease of processing my photos in Photoshop. I’m not advocating a mass return to film, but I do think we need to use restraint when post-processing our digital photos. It’s not necessary to clone out every perceived ‘imperfection’ or show detail in every highlight and shadow.

I really enjoy long-exposure photography, often using exposure times in minutes rather than seconds. It’s a technique that can help simplify composition, but a big part of what I love about this type of photography is the lack of control over the end result. Often I get lovely surprises when I see the results because something unexpected happened during the time that the camera shutter was open.

If we can learn to see the beauty in our sometimes imperfect and often fleetingly impermanent environment, to appreciate the visual harmony and balance in our landscapes, and to express that beauty and harmony through photographs that have a natural strength and simplicity, then not only will we enrich our own lives, but we may also communicate our love of the landscape to others.

## TOP TIPS

In the UK and Europe, my favourite seasons for mono landscape photography are autumn and winter. Not only are sunrise and sunset times at a more sensible hour (I get to stay in bed longer), but also I love the changeable weather conditions at these times of year. When the weather is so changeable, there is always a great chance of capturing interesting light to enhance the resulting images.

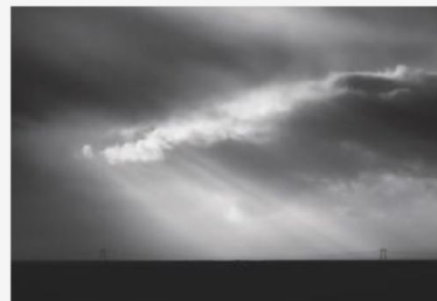
My office is in Manchester and the city is well known for its fog and mist during the autumn and winter months. Fog and mist can really help to isolate subjects from the background and add a wonderful sense of mystery.

Trees are one of my favourite subjects for photography, and I find that they are at their very best in winter once they have lost their leaves and the delicate yet powerful structure of their branches is revealed.



## CHANGEABLE WEATHER

One of the first big breakthroughs that I made with my black & white landscape photography was the realisation that it was a great idea to go out with my camera when changeable or stormy weather was forecast. This is Victoria Harbour in Hong Kong during a monsoon thunderstorm.



## GREAT LIGHT

As landscape photographers, we all live for those occasions when the light is so beautiful that it stops us in our tracks. I photographed this lovely display of sunlight breaking through clouds during a road trip along the stunning black volcanic coast of Iceland.



## SIMPLICITY: WHY IT WORKS

Iceland is a fantastic location for mono landscape photography, with waterfalls and geysers, the northern lights and black volcanic sand beaches with dramatic cliffs overlooking the North Atlantic ocean. These two photos were taken early one morning on the coast at a place called Vik. I had been in the same spot on top of the cliffs with my camera and tripod since before dawn, photographing the towering basalt sea

stacks. I was entranced by the changing light and cloud formations, and by the contrast between the white of the Atlantic rollers and the black basalt sand of the beach. After a while, I noticed that the composition could be simplified by excluding the nearest sea stack. Moving the camera slightly to the left has emphasised the lovely curved shape of the beach and it's now a much stronger picture.



### INTO THE SUN

It's always worth having a go at shooting into the sun. The results can often be unpredictable, but they are always interesting and you never know when you might get something really special. This shot was taken at sunset on the north-west coast near Liverpool.



### DRAMA

Sometimes what I look for in my black & white landscape photography is drama rather than beauty. Industrial landscapes lend themselves well to this kind of approach – this photo was taken at dusk at Fiddlers Ferry, a coal-fired power station near my home in Cheshire.



### FOG AND MIST

Fog and mist can bring an aura of mystery to photos, especially in black & white. This is the Ponte dell'Accademia, which spans the Grand Canal in Venice, Italy. I was there in October and lucky enough to get misty conditions on several mornings in the early hours before dawn.



# B&W Colour Filters

Colour filters are used with B&W film to control the brightness of different colours, but the same effect can be achieved digitally

**W**hen shooting in black & white, coloured filters provide a simple yet effective way of controlling different wavelengths of light. They allow the user to create

better separation between grey tones or to increase or decrease the contrast.

Each colour filter lets its own colour through, whilst blocking out other colours. For example, a red filter will only allow red light through, blocking out the vast majority of green and blue light. This has the effect of darkening green grass and blue skies, making landscapes look very high contrast.

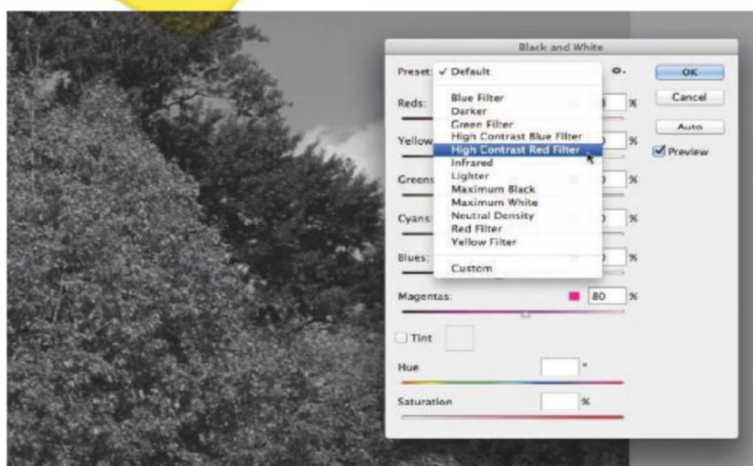
The advent of digital photography means that these filters can be added easily in image editing software. Most software has simple one-click black and white colour filters, but more advanced software will also allow individual colour channels to be adjusted, allowing very localised corrections of many colours.

Although the colour filter effects can often be applied in camera, the effect is only applied to JPEG images. For the most amount of control it is advisable to shoot both raw and JPEG images. Shooting images in this way means that you have the b&w JPEG images as a reference when shooting, but have the unedited raw file to apply more sophisticated adjustments. See below, and the image opposite to see just how different colour filters affect different parts of a landscape image.

When using black and white film, coloured filters can be used to adjust the brightness of different tones in the image



Software such as Adobe Photoshop allows for a huge range of control over different colour channels compared to the simple in-camera black and white modes



## WHAT COLOURS DO

### YELLOW

A yellow filter darkens blues and purples, while lightening green, red, orange and yellow. This is useful for darkening a blue sky and for a clearer image when shooting in haze.

### BLUE

Blue filters lighten the sky of an image, and can also help to lighten fog and mist, whilst lightening other colours. Not often used, but a useful filter for a winter's morning.

### ORANGE

Orange filters give a more intense result than a yellow filter does, with darker blues and purples. This is useful for skies and hazy conditions. The contrast between green foliage and paler flowers is also increased.

### RED

A red filter blocks blue and green light. This can leave blue skies almost black and create a powerful contrast between foliage and flowers. It can be used to create very dramatic landscape images.

### GREEN

A green filter is ideal for any plant or flower shot as it lightens greens and yellows, bringing out detail in some foliage. Green wavelengths are useful when using a digital camera as they generally show less noise.



The effect of the coloured filter effects can be easily seen in the rendering of the blue sky in the image



# Complete guide to shooting infrared images

You may not be able to see infrared light, but a camera can. We explain everything you need to know about infrared photography







There are many different ways in which infrared images can be captured. Some cameras, including compacts, DSLRs and compact system cameras, will be sensitive to infrared light to some degree straight out of the box, while others will require modification. The majority of digital cameras are fitted with an infrared blocking filter, also known as a hot mirror, that stops infrared light from reaching the sensor. Depending on the strength of this hot mirror filter, a little bit of infrared light may creep through, but for the most part it is this filter that prevents true infrared images from being captured on digital cameras.

It is a simple matter to establish a camera's suitability for shooting infrared images. All you need to do is use an infrared remote control, such as that used for televisions, and point it at the camera while taking an image. If you can see the light from the remote control's LED, then your camera is sensitive to infrared light.

If a camera shows some response to infrared light after testing it using an infrared remote control, then an infrared filter can be bought to block out most or all of the

visible light spectrum and allow only infrared light through. Which filter to use depends on the exact effect required. For more information on this, see our round-up of infrared filters on page 65. If you already own an infrared filter, you can test your camera's response just by using the filter on a bright sunny day and seeing how much, if any, infrared light is captured.

## CHOICE OF CAMERA

There are some DSLRs available that are ideally suited to infrared use, particularly the Sigma SD range, which have hot-mirror filters designed for easy removal without having to take the camera apart. With the filter removed the camera is sensitive to infrared light, so an infrared filter can be fitted over the lens to block out visible light and allow only infrared light through.

Also suitable is the Fujifilm FinePix IS Pro, which has no hot-mirror filter but is sadly no longer in production. If you can find one for sale, either new or secondhand, it commands a price of around £1,000.

The problem with using an infrared filter with a DSLR is exactly the same as when shooting on film. The filter

Landscapes look particularly pleasing, as blue skies go very dark while foliage is very bright



## WHITE BALANCE

As our eyes don't see infrared light, there isn't a right or wrong way of adjusting the colour of infrared images. However, we have become accustomed to seeing these images in a particular style due to the way in which they are printed from infrared film.

The starting point when adjusting the colour of an infrared image is to set the correct white balance in-camera. Using the

AWB setting is useless if the images are to be kept in colour because they will appear as a bright salmon pink, although this is fine if they are ultimately intended to be black & white.

For colour images, it is best to set a custom white balance. This can be done by taking a reading from a piece of white paper or grey card, although many infrared

photographers simply use a patch of green grass. The result will be foliage that is a light grey or white, and skies that are brown or dark amber.

Sometimes it can be difficult to take a white balance reading successfully, which can often be due to the length of exposure. If so, simply increase or decrease the exposure time.

blocks visible light, which means that focusing and composition must both be set before the filter is fitted. Thankfully, DSLRs can overcome this with the use of live view, which accounts for the lack of light and brightens the image on the rear screen.

Converting a camera for infrared use – such as we have done with a Nikon D70S on page 64 – is a more convenient solution. After removing the hot mirror, an infrared filter is put in its place. As the filter no longer lies in the optical path between the lens and the viewfinder, focusing and composition are possible without having to constantly take the filter on and off each time. For those who are serious about infrared photography, converting a DSLR for infrared use is definitely the best solution, although it will mean that the camera can then only ever be used for shooting infrared.

## INFRARED LIGHT

While there are many man-made sources of infrared light, by far the best source is the sun. Infrared light will be at its strongest on very bright sunny days, at around noon when the sun is at its peak. Usually, landscape and portrait photographers avoid shooting at this time of day because of the very high contrast that bright sunlight creates, but this time of day is perfect for those who want to shoot infrared images.

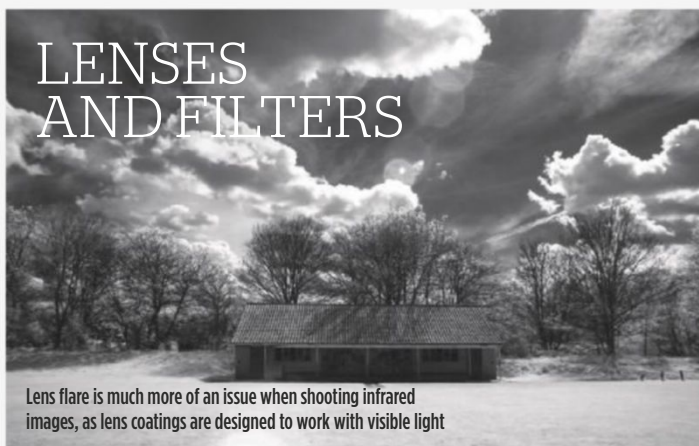
One of the reasons that infrared photography is immediately associated with landscapes is due to the particular way that infrared light affects foliage and the sky. Clouds reflect infrared light, so the denser the cloud the brighter it will appear in the image. Blue skies, on the other

hand, absorb infrared light and become very dark. This contrast can turn even a fairly ordinary-looking bright sky into something much more dramatic.

Foliage also reflects a lot of infrared light, and this causes grass and leaves to turn a very bright white. Again, this effect is at its most visible in the middle of the day, but it is even more pronounced in late spring when plants are flourishing.

However, just because the middle of the day is seen as the optimum time for shooting infrared images, it doesn't mean that interesting effects cannot be captured at other times. Just before sunset and just after sunrise are equally interesting times. The sun is low in the sky, which causes very long shadows, and where there are shadows there is usually very little infrared light. So while an image

## LENSES AND FILTERS



Lens flare is much more of an issue when shooting infrared images, as lens coatings are designed to work with visible light

## USING FILTERS

One thing that is often overlooked when shooting infrared images is the use of filters in front of the lens. Photographic filters are designed to block visible light, not infrared light, and as such some of the most popular filters simply won't work. For example, an ND filter will have no effect, because although some visible light is blocked, infrared light is not. The camera will perform as if the filter isn't there. To increase the length of the exposure, a hot-mirror filter must be used. This will block out most of the infrared light, although the exposure times could be very long, even in bright sunlight.

Graduated ND filters won't work, either. The infrared light will pass straight through the darker gradient. Thankfully, this is less of an issue as the sky in an infrared image will usually be high contrast and won't

require an ND grad filter to darken it.

A filter that can affect infrared photography is the UV filter. Although in theory this shouldn't have any effect, the filter coating can cause images to look soft, even when the lens has been correctly focused. Again, the only way to find out if the filter is having an adverse effect is to compare images captured with the UV filter on and off.



In theory, any lens can be used to shoot infrared images, although there may be a few limitations and some will be better than others. Issues occur with the coatings that are used with lenses. Optical coatings are designed to work with visible light, and may or may not work with the infrared spectrum. As a result, some lenses may display a lot of lens flare, sometimes even when not shooting directly into the sun. For this reason, it is advisable to use a lens hood, and remember that any slight lens flare visible through the viewfinder may be hugely exaggerated in the final image.

Another issue is hotspots, which show as large circular flares directly in the centre of the image frame. They are caused by the internal reflections of the infrared light within the lens, and are again due to the coatings of some internal lens elements that are designed only to reduce the reflection of visible light.

The best way to find out whether a particular lens is suitable for infrared use is to test it at different apertures and focal lengths. Just as when shooting conventional images, it may be the case that some lenses perform better at particular settings.

Alternatively, search online. There are lists available on the internet from people who have reported back on the performance of a particular lens when used for infrared. One such list can be found at: <http://www.kolarivision.com/lenshotspot.html>. The list is quite comprehensive, with many popular lenses listed, although there are some conflicting reports of the performance of some of them. If you are buying a lens for infrared use, make sure you do some research and, if possible, try the lens before purchase. Another tip to remember is that just because a lens has infrared markings doesn't mean it will necessarily work on an infrared digital camera. While ideal for film, some lenses, due to the sensitivity of the sensor and the anti-reflective coatings used on the lens not being specifically designed for digital cameras, may not perform as well on a digital model.



■ exposed as normal may pick up some visible light in shadow, an infrared image will show these shadows as being far darker. Aim to photograph scenes that have interesting shadows, such as shooting through tall trees first thing in the morning. Also, pay attention to items that are in the shade, as they will be darker than they would be in a normal exposure.

## METERING AND EXPOSURE

Most digital camera sensors are more sensitive to infrared light than is the case with infrared film. When using a infrared converted camera, such as the Nikon D70S with a 720nm IR filter fitted over the sensor, you can quite happily use the evaluative metering system, which is obviously completely unaware that there is now an infrared filter positioned in front of the sensor. Generally, the results when using evaluative metering were exactly as would be expected, requiring only a slight adjustment to get the desired exposure. In very strong sunlight, exposures don't need any adjustment, but in duller conditions setting the exposure compensation to +3EV allowed me to happily point and shoot.

The exact exposure adjustment required will depend on the sensor of the camera and the filter in use. An 890nm filter blocks the passage of all visible light, as well as some of the infrared spectrum so that only an extremely narrow frequency of infrared light can pass through. When using this filter, exposure times can increase slightly, but again it should still be fine to handhold the camera.

Long exposures occur when a camera with a weak hot-mirror filter is used for infrared photography. In these instances, the hot-mirror filter will block some, but not all the infrared light, so a longer exposure of a few seconds

may be necessary to allow enough infrared light to pass through to the sensor.

## AUTOFOCUS

Focusing has always been an issue with infrared images. Lenses are designed to focus visible light, not infrared light, and as a result the autofocus system of a camera cannot be relied upon. Infrared light comes into focus just in front of visible light. It can be compared to chromatic aberration, where different colour wavelengths focus at slightly different points, and if a lens cannot bring the various colours to focus at the same point, chromatic aberration is the result.

Many older manual-focus lenses have an infrared focus marker, which can be used to adjust the focus for infrared light. However, these can't be completely relied upon as many are inaccurate, and if using a zoom lens the infrared focus point can in fact change throughout the zoom range.

For most landscape images, autofocus can be used in conjunction with an aperture of f/8 or f/11, and the depth of field should be sufficient to ensure that the image is in focus. However, remember to pay attention to any subjects in the foreground and make sure they are sharp before leaving the scene. For images where a shallow depth of field is required, manually focus slightly in front of the subject and then review the image on the rear screen to see whether it is in focus.

Although the autofocus of a converted camera can be adjusted for infrared use, it can still vary from lens to lens. If you are having a camera converted and know there is a lens you will use more than any other on the camera, then supply the lens with the camera and ask that the AF be adjusted for this lens.

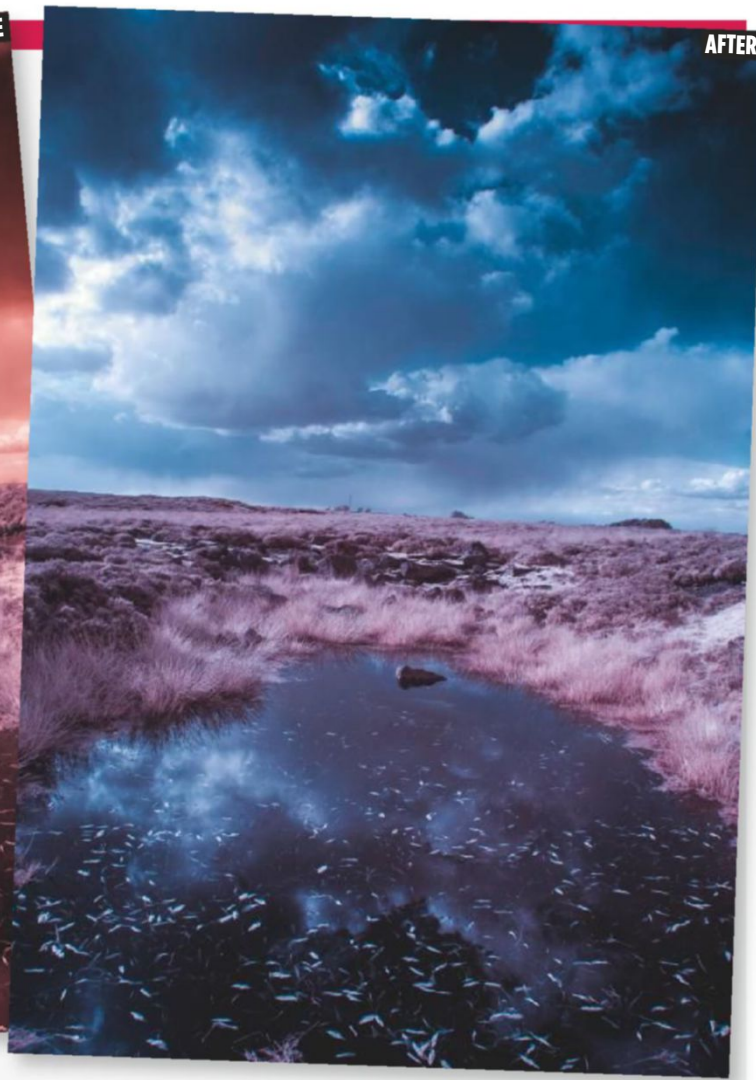
Timing is important, as a delay of just a few seconds, when clouds block sunlight, can change the look of an infrared image dramatically

**BRIGHT LIGHT**



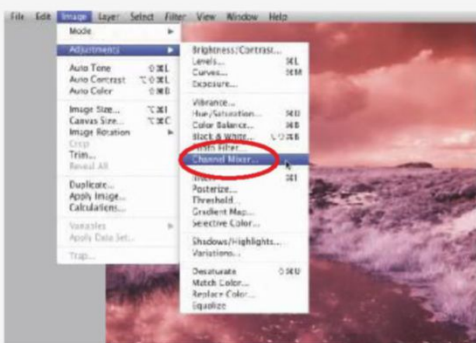
**DULL LIGHT**



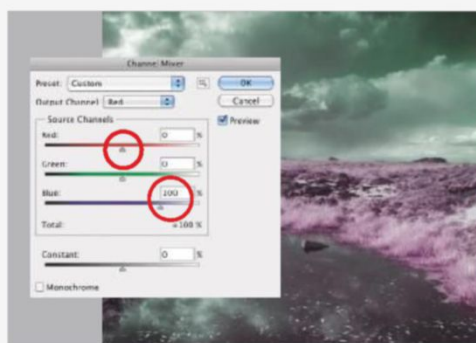


## SWAPPING CHANNELS

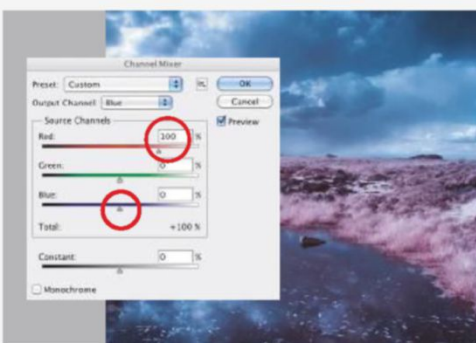
One popular technique when shooting digital infrared images is to swap the red and blue channels around. Having taken a custom white balance reading, the resulting image should have a red/amber sky. To turn this into a bright blue sky while leaving foliage looking white, simply swap the red and blue channels of the image.



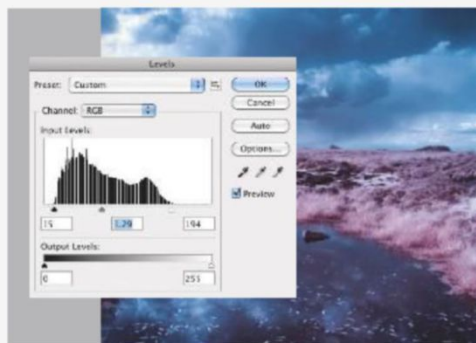
**1** In image-editing software, select the Channel Mixer. In Photoshop, this is found under Image> Adjustments> Channel Mixer.



**2** With the Red channel selected, move the Red slider from +100 to 0, and the Blue slider from 0 to +100.



**3** Now switch to the Blue channel and boost Red from 0 to +100 and reduce Blue from +100 to 0.



**4** With the Red and Blue channels swapped, all that is left to do is adjust the image Levels.



# STEP-BY-STEP CONVERSION GUIDE

Here is our brief guide to the steps involved in converting a camera for infrared use. The camera in question is a Nikon D70S, on which many of the images in this section were taken

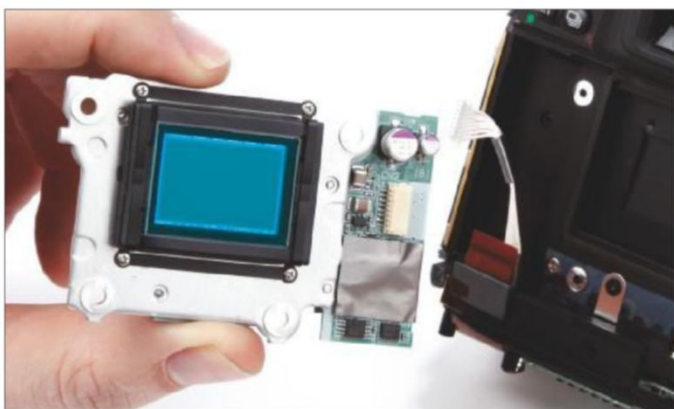
Do not attempt to convert a camera yourself unless you are confident in doing so and have the necessary tools and knowledge



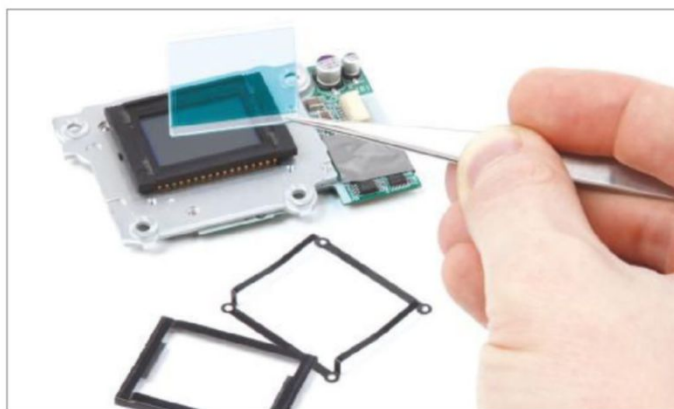
**1** We need to be able to access the image sensor unit to replace the hot-mirror filter with the infrared filter. To do this, the first step is to remove the base of the camera.



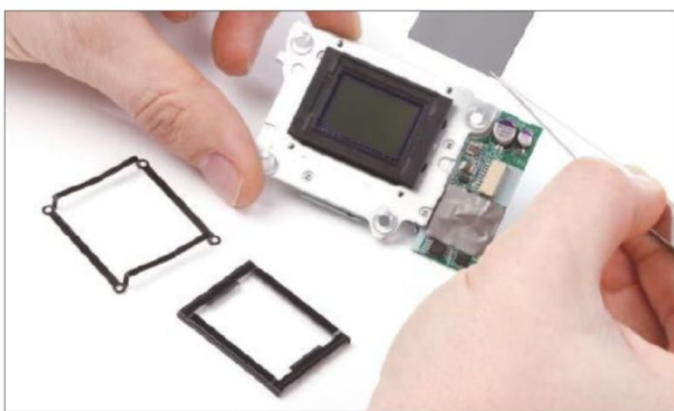
**2** With the base of the camera removed, the back of the camera can now also be unscrewed and taken off. Most cameras, as with the D70S here, will have a ribbon cable that runs from the camera's main circuit board to the LCD screen on the back of the body. This cable simply unplugs from the socket and can be carefully prised apart using a pair of tweezers.



**3** The next step is to remove the sensor unit itself from the camera. Again, you can simply unscrew the unit, but take care not to damage the data ribbon cable. Prise the sensor unit out of its socket and lift it completely free of the camera.



**4** Usually, the hot-mirror filter is held in a surround that will need to be unscrewed. In some cameras, such as the Nikon D70S, the filter can be carefully lifted from the sensor. In others, however, strong glues are used so extra care and attention will be required. One slip and you could damage the sensor, which is why the procedure is best left to those familiar with the process and the challenges that particular cameras present.



**5** With the hot-mirror filter removed, the replacement infrared filter can be inserted. Obviously, at no point should you touch the surface of the filter, as any marks will affect image quality. Also, be sure to perform the conversion in as clean an environment as possible. You don't want to get any dust between the sensor and the filter glass, as it will require the camera to be completely taken apart again to clean it.



**6** With the filter securely in place, it is time to put the camera back together, following these steps in reverse. Make sure that all parts are correctly reassembled, and that great care is taken not to introduce any dust or debris into the camera body.

# WHICH FILTER?

Removing the hot-mirror filter from the camera is only part of the process, as another filter must be fitted in its place. We list some of the most popular filters available, and explain what they do and the effects they have

## HOT-MIRROR FILTER

This filter is used in a digital camera to block out most infrared and ultraviolet light while allowing visible light to pass through. It is positioned in front of a camera's sensor and must be removed to allow infrared use.



## CLEAR FILTER

This clear-glass filter has several advantages. It allows infrared light to pass through, but does not contain an anti-aliasing/low-pass filter so images should be sharper. However, it allows visible light to pass through as well as infrared, so for infrared shooting an IR filter must be placed over the lens. To revert to the normal visible spectrum, place a hot-mirror filter over the lens, although as third-party hot-mirror filters won't be designed for a specific camera, colours may vary slightly from the original. Alternatively, shooting raw images will allow more precise control over the individual colours.



## 590NM

Without a hot-mirror filter, the camera's sensor is sensitive to the entire colour spectrum, including infrared. Placing a 590nm filter in front of the sensor blocks the colour spectrum below 590nm and allows the wavelengths of light above this through. Dark yellow/amber, orange and red light can reach the sensor, as well as infrared light, with the result that the blue spectrum is rendered a lot darker as this region in particular is blocked. Greens should also appear dark, but foliage reflects a lot of infrared light, so grass, trees and plants will appear very bright when shot in bright sunlight.



## 665NM

This filter is a step above the 590nm filter and blocks all light below 665nm, which lets only very dark orange/red colours pass through. All other colours, including yellow, blues and greens, will be blocked and show up as darker areas in an image.



## 720NM

The 720nm is the most popular choice for infrared. It blocks out the entire visible colour spectrum, so only infrared light can pass through. As a result, only surfaces from which infrared light is reflected will be visible in the image, so a blue sky will turn very dark, but any clouds reflecting infrared light from the sun will be very bright. Plants reflect a lot of infrared light, especially in spring, so grassy landscapes can look as though they are cloaked in snow and trees covered in white blossom. On a practical note, the 720nm filter can require around a 1EV exposure adjustment, so handheld shooting is possible.



## 830NM

The most difficult filter to use is the 830nm filter because it blocks out not only all the visible spectrum, but also some of the infrared spectrum. This filter allows only really deep infrared wavelengths to get through and therefore results in very high-contrast infrared images. Exposure times may be slightly longer than when using a 720nm filter.





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# Long exposures

While patience and understanding are key to capturing any stunning long-exposure image, many other considerations can make it a daunting process. We explain what's involved and how to do it right

Look for interesting structures that are surrounded by water to create a focal point

This article will explain the principles, techniques and equipment needed for long-exposure photography. It is not simply a matter of mounting the camera on a tripod, setting a long exposure and then waiting patiently – if only it were! To capture the best-possible images, there are many small factors to consider, each of which will affect the outcome.

## EXPOSURE TIME

The correct exposure can vary hugely, depending on the intended subject matter. For example, to capture the movement of people walking through a scene will require an exposure of only a few seconds, while photographing the appearance of stars travelling across the night sky will take a number of hours.

The key to a good long-exposure image is therefore to set the correct exposure time for the subject. This 'correct' exposure time will be affected by the amount of light in the scene and the exact movement of the subject. In bright sunlight and using a standard lens, the slowest possible shutter speed may only be 1/30sec. Although this is fairly slow for a shutter speed, it is not long enough to effectively

Most of us are familiar with long-exposure images. Whether it is the swirling lights created by traffic in a city at night, or the water of a flowing river, long exposures have been used by photographers to capture patterns and movement over a greater-than-usual period of time.

When talking about long exposures, we generally mean images that have been exposed for longer than 1sec. However, it is not uncommon to use exposures of minutes or even hours to capture a subject's movement. The length of time that is used to create the exposure is one of the key considerations for the photographer, and can be difficult to work out.





A beanbag attached to the hook on the centre column of a tripod can help to weigh it down, while a remote trigger, such as the ioShutter iPhone app, makes sure you don't move or knock the camera when firing the shutter

capture the movement of people walking past, let alone clouds drifting through the sky.

It is essential, then, to have some way of blocking or reducing the light entering the lens. This can be achieved using a neutral density filter. For the uninitiated, ND filters are slightly opaque filters with a neutral grey tint. They are available in different strengths and are designed to filter the light entering the lens. By hindering the light, they increase the length of exposure that is required for a well-exposed image. See About ND Filters (over the page) for more information.

## SECURING THE CAMERA

While capturing the motion of the subject is the point of a long-exposure image, one thing to be avoided is camera movement. Camera shake can ruin hours of work, so it is

vital to keep the camera absolutely still – and a good tripod is essential for this. When the shutter is open for minutes at a time, the camera will be affected by even the slightest movement, so the tripod legs and head must be extremely secure.

If you plan to take a long exposure over a period of minutes or hours, it is advisable to check all the locks on the tripod legs and head. Make sure they are tight and secure, and that they won't slip during the exposure.

Sometimes even the sturdiest tripod needs a helping hand. In windy conditions, remove the strap from the camera. This can often end up blowing in the wind, and even the slightest movement from this can cause the camera to vibrate and result in a blurry image.

It is also a good idea to weigh the tripod down with some ballast. Some tripods include a hook on the end of the centre column, from which a beanbag can be hung. This extra weight will help to prevent smaller movements, but be careful that the beanbag itself doesn't add its own movement by swinging in the breeze. If there is no ballast hook, try placing a beanbag filled with rice on top of the camera during the exposure – this can also help to reduce the effects of mirror slap.

One factor often overlooked is the firmness of the ground on which the tripod will stand. For example, when shooting a long-exposure seascape on sand, the tripod legs will sink into the sand over just a short period of time. Instead, try to find a solid surface, or consider putting down a blanket under the tripod legs and then pushing down firmly, to help prevent further sinking.

## FOCUSING

Trying to find the correct focus point when shooting long exposures can be problematic. In low light, it may be necessary to use a torch to help correctly focus the camera. However, this is further complicated if a ND filter is involved – even in the brightest sunshine, most DSLRs will not be able to focus while using a 10EV ND filter. So it may be worth switching to live view mode, as some cameras will still be able to focus in this way. It is far easier, though, to focus the lens and then lock it into position by switching to manual mode, before then carefully attaching the ND filter.

## FIRING THE SHUTTER

The vast majority of cameras will have a maximum shutter speed of only 30secs, and this is fine for many types of long-exposure image. However, shooting star trails will require far longer exposures, and this is where the bulb (B) setting comes into play.

When in bulb mode, the camera's shutter will remain open for as long as the shutter button is held down. This will require the photographer to time the duration of the exposure, but extreme precision is less important when the exposure time is minutes rather than a fraction of a second.

That said, it is very important to keep the camera as still as possible, so be sure to avoid all contact because even



The ioShutter and accessory cable can be used to time the exposure and fire the shutter

the faintest camera movement could blur the image. As such, it is essential when using the bulb mode to use some sort of remote release.

Many remote releases have a built-in bulb lock. This will open the shutter and begin the exposure on the first press of the remote button, and close the shutter and end the exposure on the second press. Time the exposure using a watch so that the shutter is left open in bulb mode for the correct length of time.

Most manufacturers offer advanced timer-control releases that will allow a precise length of time for a given exposure, so that it is no longer necessary to switch the camera on and off. These remote controls can be expensive, though, with such examples as the Nikon MC-36 and Canon TC-80N3 each costing more than £100. Less expensive third-party versions are also available, and there are even more economical solutions available in the form of remote releases that work via a smartphone.

Triggertrap Mobile and ioShutter (pictured left) are more advanced shutter release cables that work with smartphones. For more on cable releases see pages 86-87.

With a long enough exposure  
waves can be calmed to a soft blur  
*Nikon D3, 16-35mm,  
20secs at f/14, ISO 100*



## SHOOTING WATER

From waterfalls and rivers to lakes and oceans, a long exposure can transform a simple image of water into an otherworldly experience

The constant movement of water provides an obvious subject for long exposure images. With a long enough exposure water turns into a blurred mist as the random movements of the water become exposed on the camera's film or sensor.

Even with just an exposure of a few seconds water can become blurred, but given a longer duration, water begins to look like a mist or fog, forming almost a cloud-like appearance. Combined with cloud movement long exposure images of seascapes can begin to take on the appearance of another world entirely.

Whilst the water and sky can make interesting patterns and tones, long exposure images of moving water can often benefit from having a stationary subject in the shot to juxtapose the surrounding movement, or act simply as the focal point of the image. Obvious subjects are rocks, jettys and groynes.

One thing to remember

**When shooting people in a long-exposure image, it is possible to make them appear ghostlike if they don't stay perfectly still for the entire duration of the exposure**

*Nikon D300,  
18-200mm, 1sec  
at f/8, ISO 100*

when shooting images near water, whether it be a lake, river or the sea, is that the ground will generally be very soft. Over the course of a long exposure it may be that the camera and tripod will slowly sink into the ground a little. On sand this is particularly frustrating, but can often be solved by standing on a dry patch of sand and really pushing the tripod legs into the ground, or by finding some rocks to set-up on. Remember to always wash the legs of the tripod after using them on the beach, as the sand and salt water can damage the locks and tubes.

On other soft land make sure you give the legs a little push into the ground and leave the tripod to settle for a short time before attempting a long exposure image.





Star trails are one of the most common night-time long-exposure images  
 Sony Alpha 7S, 17mm,  
 30secs at f/4, ISO 3200



## CALCULATING THE EXPOSURE

Most cameras find it hard to meter through a dense ND filter, so it's best to take an image normally and obtain a precise exposure without the filter. From this, the correct exposure for the ND filter can be calculated. Just double the exposure time for each exposure value. So for an exposure of 1/8sec, the correct exposure with an ND2 filter will be 1/4sec. With an ND4 filter this is 1/2sec, and 1sec with an ND8 filter. With a 10EV ND filter, it becomes 2mins.

Of course, it is easier to print a chart of shutter speeds at varying EV strengths. Also, there are free smartphone and tablet apps, like the LongTime Exposure Calculator (left), to use with iPhones and iPads. Enter the regular exposure and intended filter, and it will give the correct exposure.



## SHOOTING IN THE DAY

You can take long-exposure images during the day using a 10EV ND filter. With this filter, it should be possible to take images with exposures of 30secs or even longer, depending on how bright the light is.

Although subjects are perhaps a little more restricted when shooting long-exposure images during the day, there are still plenty of interesting photo opportunities. For one of the most striking long-exposure photographs, try capturing the movement of clouds. Over the course of a 30sec exposure, clouds will appear to bend and stretch as they move across the sky. This works particularly well with white fluffy clouds against a bright blue sky, and many photographers then convert these images into black & white to darken the sky and create dramatic high-contrast images.

Another favourite daytime subject is the movement of people. Busy locations such as public squares, or commuters on their way to work, make for interesting scenes.

Buildings in and around the scene will remain completely sharp and in focus, while people will turn to ghostlike figures as they move around during the course of a long exposure. These movements are also nicely juxtaposed with other people in the scene who are standing still. The classic example of this is commuters waiting at a train station while other people rush past them trying to catch their trains.

The problem here is that as the exposure lengthens, any people that are moving in the scene will become fainter and fainter, and will be at risk of disappearing altogether if the exposure time is in minutes rather than seconds. So in order to capture the movements of people passing by, exposure times of between 5secs and 20secs are best. This duration should ensure that anyone moving in the scene will remain in the frame for the entire length of the exposure, and that their movement will be captured in the final image.

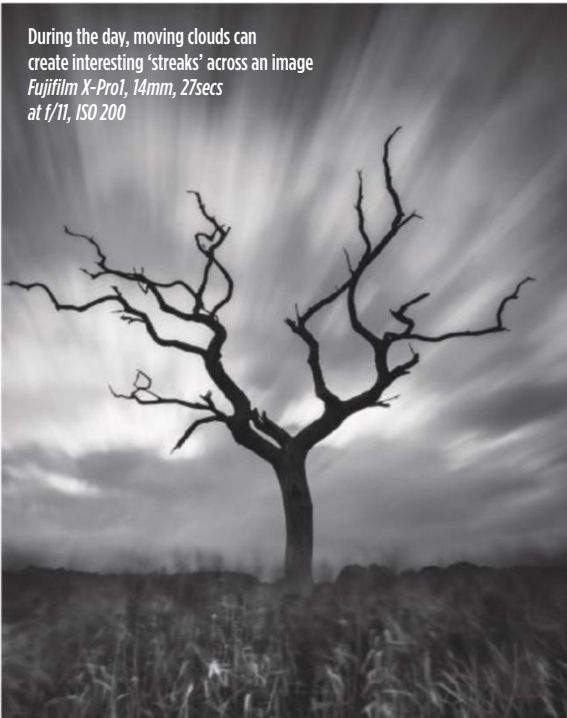
# SHOOTING AT NIGHT

Shooting at night offers the chance to get very some long exposures. The classic night-time long-exposure shot that most people try is shooting traffic trails through a winding country road. A relatively short exposure is all you need to capture these trails, and in a town or city where there is a lot of ambient lighting, an exposure time of as little as 30secs may be all you need to capture a traffic trail.

Out in the countryside, where there is less ambient light, a far longer exposure will be needed to capture both the traffic trail and the surrounding landscape. The length of the exposure will depend on the level of ambient light. Under a full moon, an exposure of 1-2mins may be enough, but if it is a new moon and an overcast sky, the exposure may need to be as long as 1hr. Of course, this also depends on whether or not an ND filter is being used, and the choice of aperture. At night under a new moon, an ND filter may well be unnecessary.

Another classic long-exposure subject is star trails. These images appear to show the stars moving across the sky – an effect that is actually created by the rotation of the Earth. To create a good star trail, exposure times can last from 15mins up to many hours. One key piece of advice when photographing star trails is to make sure that a large aperture is used – try to use a lens with an aperture of f/2.8 or larger. The light from stars is faint and, as they move across the frame, it is important to capture as much of the light as possible at any one time.

If the landscape is to be included in an image of star trails, then the required exposure time will once again depend on the level of ambient light. Just as with traffic trails, the brightness of the moon can dramatically affect the exposure time necessary for illuminating the landscape. To capture star trails, there must also be very little light and atmospheric pollution. The best star-trail images therefore tend to be taken in the countryside on cold, clear nights.



During the day, moving clouds can create interesting 'streaks' across an image  
Fujifilm X-Pro1, 14mm, 27secs  
at f/11, ISO 200

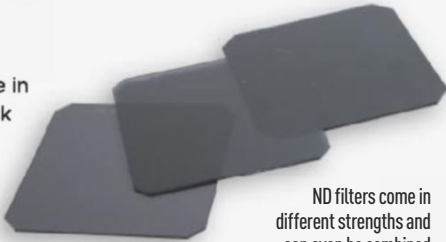
# ABOUT ND FILTERS

If you plan to take long-exposure images, you will need a neutral density filter. We take a look at the different types

## ND FILTERS

Neutral density filters come in varying strengths that block different amounts of light, and therefore affect the length of the required exposure. The strongest filters increase the

necessary exposure time by 10EV. All the manufacturers have various ways of naming their ND filter ranges, so we have included the table below as a reference.



ND filters come in different strengths and can even be combined

## STACKING FILTERS

By stacking ND filters together, their strengths can be combined. For example, two ND32 (5EV) filters will combine to produce the same result as an ND1000 (10EV) filter. This is useful when a precise exposure duration is required, or if one 10EV ND filter is too strong. Two 10EV filters can also be stacked to create a 20EV filter, for a very extreme result. For example, our 1/8sec original exposure, which becomes a 2min exposure with a 10EV ND filter, becomes a 2,048min (34hrs and 8mins) exposure with a 20EV equivalent ND filter set.

The 20EV filter combination allows the user to shoot with a very shallow depth of field on a bright day – a 1/4000sec exposure allowing, say, a f/2.8 aperture in sunshine, would become a 4min exposure with a 20EV increase. It therefore offers the chance to experiment with a shallow depth of field when using a long exposure.

## VARIABLE ND FILTERS

Variable ND filters are essentially two polarising filters placed together. By turning one of the filters, the polarisation causes light to be blocked. A different amount of light is blocked according to the angle of rotation, so the strength of the ND effect can be varied.

The problem with variable ND filters is that they are more prone to white-balance shifts. More significantly, when they are used at maximum strength, a dark 'X' shape appears across the frame. While a filter may be advertised as, say, a 10EV variable filter, the reality is that it can only really be used with a smaller 2-8EV range.

The cheaper filters can also degrade image quality. While these filters are useful tools, anyone thinking of purchasing one should do so from a reputable manufacturer.

An alternative is to use two linear polarisers together and rotate one of them, but do be aware that some strange colour shifts and a loss in image quality may result, depending on the quality and the strength of the effect used.

Filter	Reduction (EV)	Density
ND2	1	0.3
ND4	2	0.6
ND8	3	0.9
ND16	4	1.2
ND32	5	1.5
ND64	6	1.8
ND256	8	2.4
ND500	9	2.7
ND1000	10	3.0



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# 13 Landscape editing tricks

As much as we always try to get it right in camera, there are times when we need to edit our landscape images. Skies may need to be made darker, distracting elements edited from the landscapes and colours bolstered to add punch to scenes. Over the next 12 pages we reveal the editing skills that you need to know to make sure you get the best possible landscape images







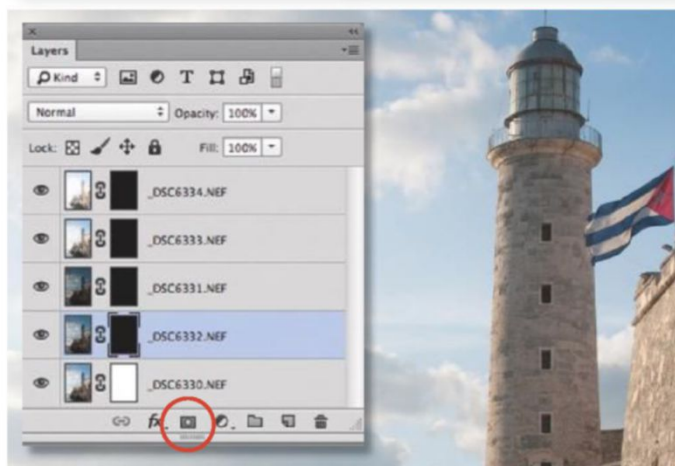
BEFORE



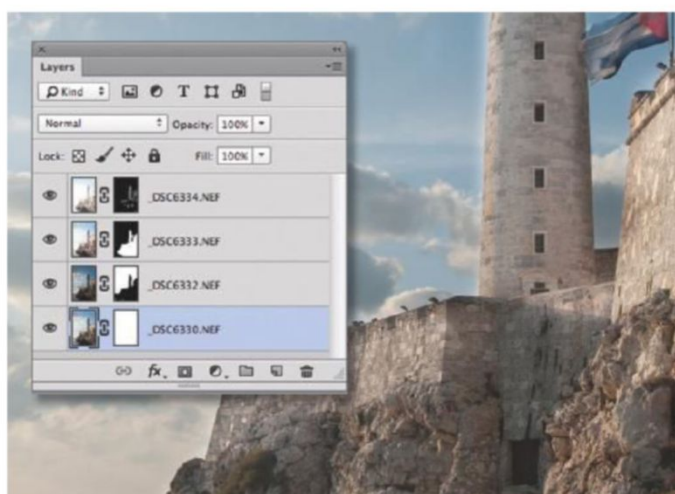


# Tip 1 Landscape Exposure Blending

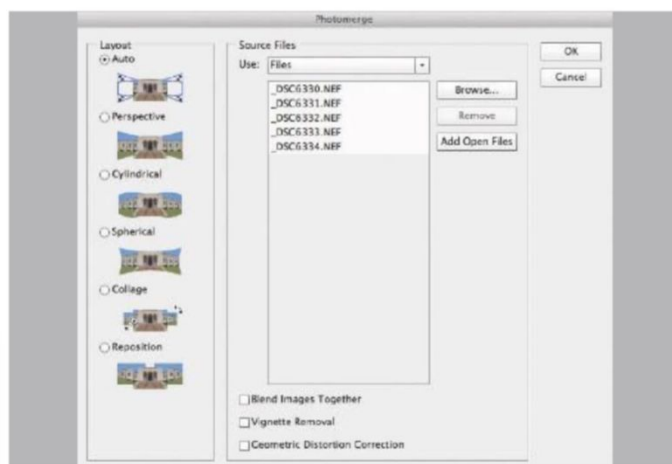
If you're dealing with a high contrast scene then there is an alternative to using a typical HDR technique. Instead try masking and blending



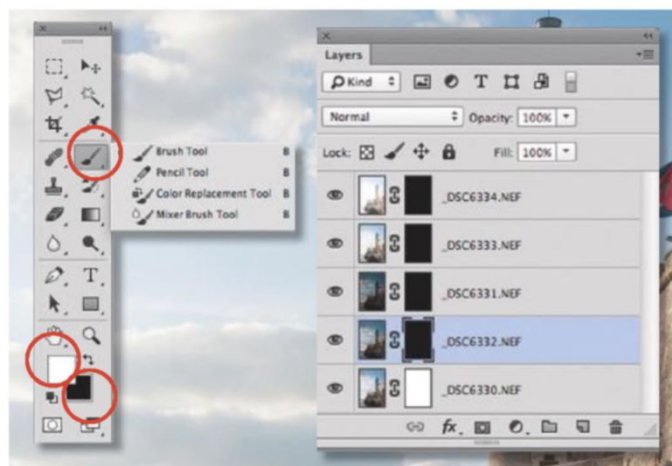
2 Photoshop combines the images into one file, with each of the five exposures as a layer. Order the layers with the mid-exposure as the base layer and then, in order, the darkest up to the lightest exposure at the top. In the Layers palette, select each layer in turn, clicking the Add Layer Mask icon to add a mask to each layer. The masks are white. For all but the base layer, invert them to black (Ctrl/Cmd+I).



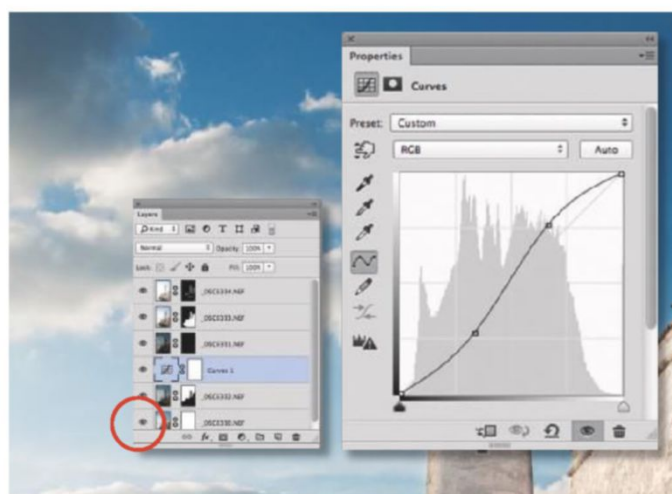
4 Overall, painting onto the layer is a slow process. Any mistakes that are made can be painted back in by switching the foreground colour to white or going back to previous steps in the History palette. Changing the opacity of the brush to around 30% introduces the layer more gradually. I have painted in the lightest layer for the sunlit building, the darkest layer for the sky and the middle layers for midtones.



1 An HDR merge does not work well for moving objects, such as the flag in this scene, for which an exposure blend is better. In Photoshop, choose File>Automate>Photomerge from the top menu. Click browse and import the bracketed images. In this case there are five. In the Layout options, select Auto if it is not already selected and then ensure the Blend Images Together box is unchecked. Hit OK.



3 White masks reveal and black masks conceal. All we see, then, is the base mid-exposure. We need to 'paint in' the darker and lighter exposures over the base layer to extend the tonal range. Select the Brush from the Tools palette and set the foreground colour to white to paint onto the layer. The brush size can be changed to deal with larger or smaller areas. Begin bringing in the dark exposure.



5 To add a little punch to the sky, I can introduce a Curves adjustment to the darkest exposure layer. With the dark layer selected, click on the New Adjustment Layer icon in the Layers palette and select Curves. When satisfied with the results, flatten the image (Layer>Flatten Image) and, if the original merge process has thrown the frame edges out of sync, crop the edges to tidy them up.



BEFORE



AFTER



## Tip 2 Masking and adding a gradient

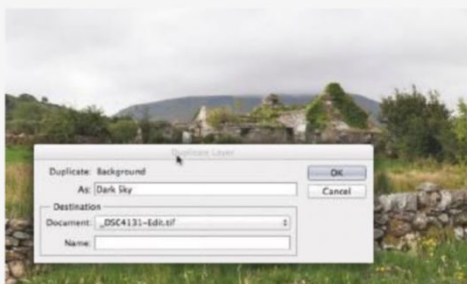
If you forgot to take your ND grad filter out with you, there is a way you can recreate the effect when editing. Just use a layer mask and add a greyscale gradient fill

If you are editing a single image rather than multiple ones, some local adjustments will almost certainly be necessary. There are many ways in which to do this. For small changes, the Dodge and Burn tools set to a very low strength of 2-8%, and with a very soft-edged brush, can be used to lighten or darken areas.

For larger areas, such as skies and landscapes, selection and masking tools can be used. Which ones you use will depend on your software and, more importantly, which you feel most comfortable with. In Photoshop, for example, the Quick Mask or Marquee selection tools are among the easiest to use.

Most of the time you will want to concentrate on editing the sky, as this is easier to blend into the landscape. The reason for this is that during early mornings and evenings, the sky will be lighter towards the horizon. This makes it easy for us to select the sky and use a large feathered edge to fade the effect off before it reaches the horizon. From here the brightness, contrast and colour saturation of the sky can be adjusted to blend it into the landscape.

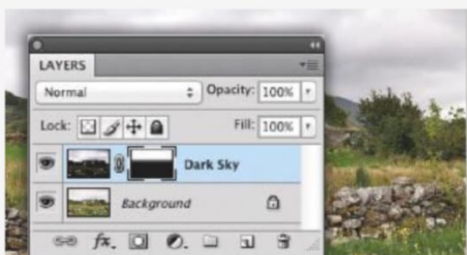
If you haven't used an ND grad filter, it is possible to go some way to replicating the effect in Photoshop and similar editing software. The trick is to add an adjustment layer to the image and then add a gradient to the layer mask.



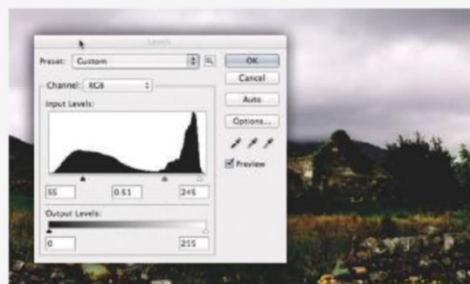
**1** Copy the original image layer by selecting Layer>Duplicate Layer. Name this new layer 'Dark Sky'. Alternatively, load a bracketed, darker version of the image onto a new layer.



**3** In the Layers palette, create a new Layer Mask for the Dark Sky layer.



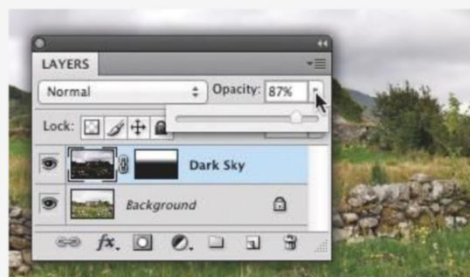
**5** Use the Gradient Fill tool to add the black-to-white gradient to the Dark Sky layer mask. Drag the gradient from black at the bottom of the image, to white at the top. Hold down the Shift key while you drag to keep the gradient at 90°.



**2** If you aren't using a bracketed image, use the Levels tool to darken the new Dark Sky image layer until you are happy with the contrast in the sky.



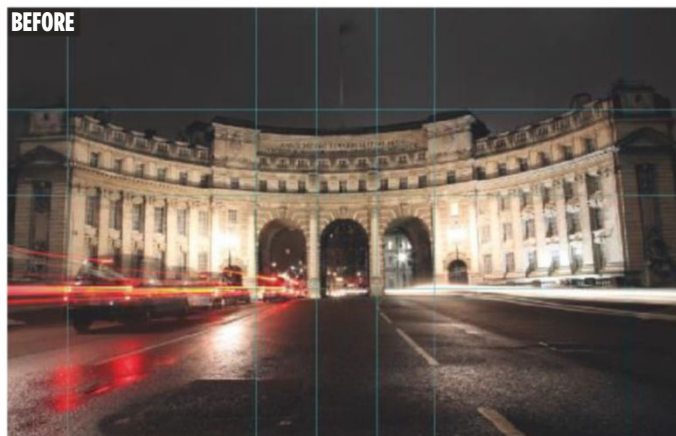
**4** Select the Gradient Fill tool from the tools palette and select a black-to-white gradient.



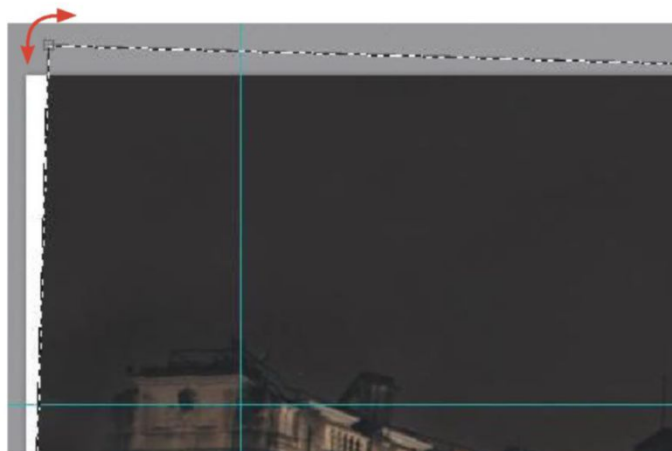
**6** The dark side of the gradient creates a hole in the Dark Sky layer, which reveals the original, lighter layer. If the effect is too strong, adjust the opacity of the darker layer.

# Tip 3 General Perspective Correction

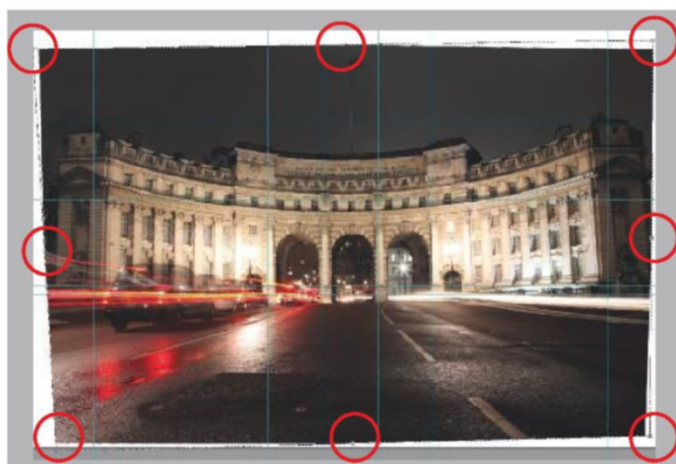
For most photographers a tilt-shift lens is something of a luxury. Thankfully you can correct perspective shifts in most image editing software



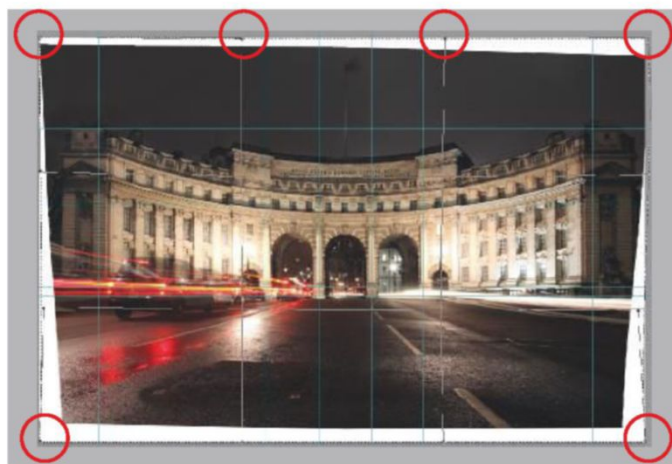
**1** With the image open, go to View>Rulers. This is used to measure and align the image. Create some visual markers to help in your correction by clicking and dragging from the centre of the rulers. Drop these guides in a place that suits your image – putting guides over horizons, buildings and straight points is best.



**2** Next, level the horizon using the guides as a visual reference. Go to Select>Select All to select the entire image, then Edit>Free Transform. A box will appear, and by positioning the cursor outside the box you can rotate the image until it is straight. When finished, hit Enter to confirm the transformation.



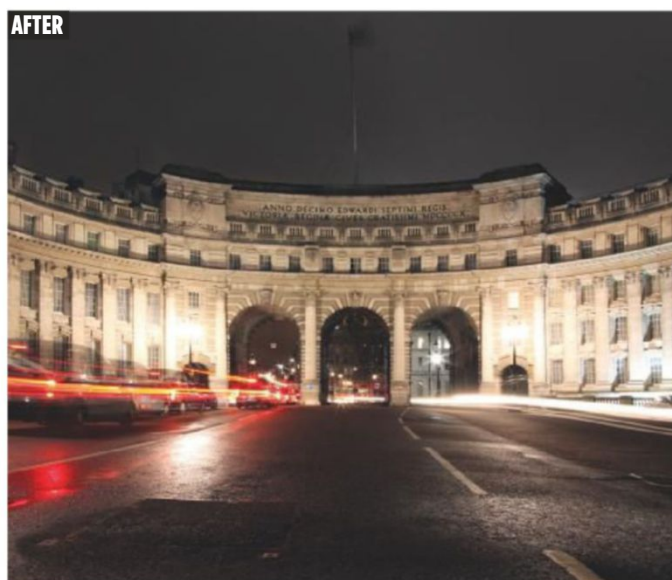
**3** To correct perspective, go to Select>Select All (if previous selection is still live, click Select>Deselect first). Go to Edit>Free Transform. A box will appear with points in the corners and at the sides. Control these individually by holding Cmd/Ctrl and clicking on them. Drag the points and use the guides to align the straight verticals. Hit Enter to confirm transformation.



**4** By now the perspective of the image should be improved, but often there will still be some problematic areas. Go to Select>Select All and then Edit>Transform>Warp. A grid will appear: clicking and dragging short distances on specific areas will allow you to bend parts of the image into a desirable position.



**5** Finally, after heavy transformation you will often find that the image doesn't fit the original canvas. To rectify this, simply click on the Crop tool and crop into the picture until the entire image fills the crop area. To remove the guides, go to View>Clear Guides.





AFTER



## Tip 4 Reduce noise for smoother skies

Luminance noise in the sky of landscape images can be a distraction. Using the clarity slider it is possible to soften skies and rid them of luminance noise

BEFORE



AFTER

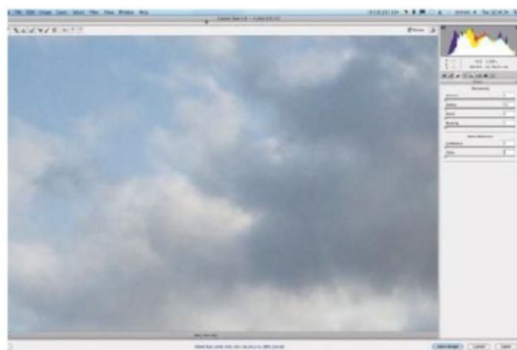


BEFORE

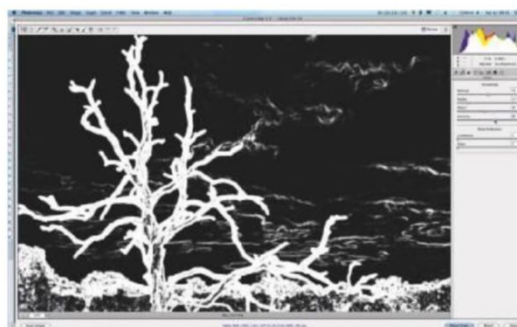




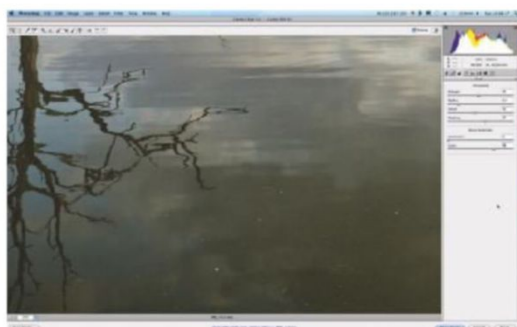
**1** Open the raw image in Adobe Camera Raw and perform all the basic colour and contrast adjustments. Zoom in to 200% and reduce all the noise reduction and sharpening settings to 0. This should allow you to see any colour and luminance noise.



**2** Zoom to 100% and use the Amount, Radius and Detail sliders to sharpen the image. Don't worry too much about the sky becoming noisier.



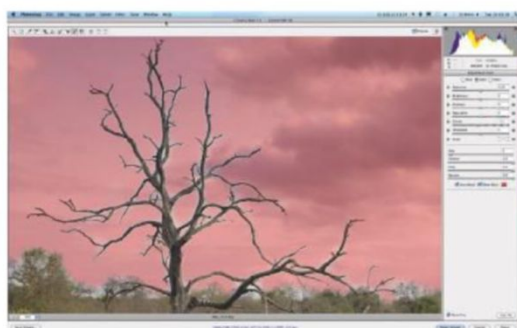
**3** Now hold down the Alt key while using the Masking slider. Anything black will not be affected by the sharpening, so the aim is to get as much of the sky as possible to be black, while leaving some edge detail in the clouds.



**4** Find a part of the image that is affected by colour noise and use the colour noise slider to reduce the noise. You can be quite aggressive here, particularly on newer raw conversion software. But be careful, as heavy use can slightly reduce the colour saturation.



**5** Select the Adjustment Brush and reset all the Adjustments to 0 except the Clarity slider, which should be set to -10. Click on Show Mask and paint to adjust the sky, avoiding any detailed edges.



**6** Zoom in closer to any fine edges and select Auto Mask. Use a small brush to paint around any fine edges. There will usually be a slight halo, but for this effect it shouldn't be too much of an issue.



**7** Turn Show Mask off and switch to a 100% view to see how the following changes will affect the image. Reduce the noise by lowering the Clarity slider. This affects the local contrast, so it should even out the brightness of neighbouring pixels. Also, reduce the sharpness to add a slight blur. Only the sky should be affected.



**8** Exit the Adjustment Brush tool and perform a luminance noise reduction of around 5-15 across the entire image. Now open the image in Photoshop (or similar) and use the Dodge tool, set to Highlights and 2% strength, to brighten highlights in the clouds. Then set the Burn tool to Shadows and 2%, and darken the shadows in the clouds.

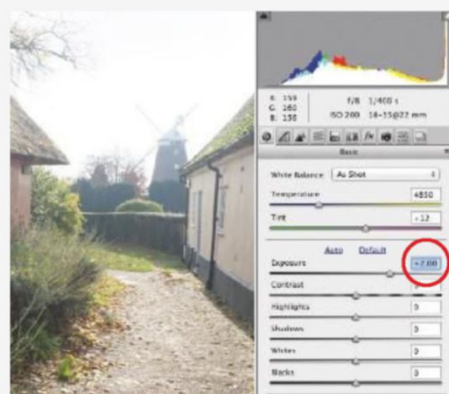




# Tip 5 Recovering Highlight Details

If an image has blown out highlights there is nothing that can be done, but often it is possible to claw back some detail if you have shot in raw image mode

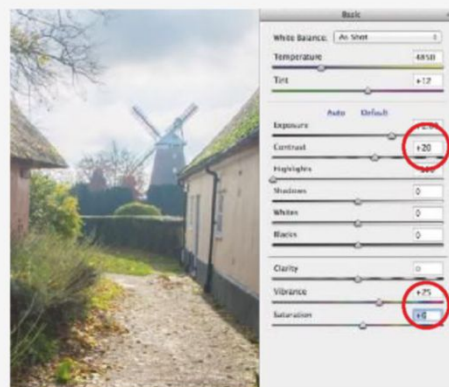
**BEFORE**



**1** Detail that simply isn't there, such as burnt-out highlights (pure white), cannot be restored. However, available tonal detail can be enhanced using the exposure sliders in Adobe Camera Raw. This landscape has been shot with a dark exposure to maintain detail in the brighter sky, but the overall exposure is too dark. Brighten the Exposure slider until the land area looks just right. In this case, I have brightened it by +2EV.



**2** The highlight detail has now blown out, but because it was there to begin with, it can be recovered. Bring the Highlight slider down until the information on the histogram has returned (the white arrow disappears). In this extreme example, the slider needs to be reduced to -60, but at its minimum -100 setting the sky looks best.



**3** A dark exposure usually has more muted colours and can appear a little flat after being brightened. A bit of vibrance and punch needs to be introduced via the Vibrance, Saturation and the Contrast sliders. I have pushed the Contrast to +20, the Saturation to +6 and the Vibrance to +25. The final result is a subtle HDR-type effect. Be careful not to push the sliders too far as the final effect can end up on the unwanted side of HDR – garish and flat.

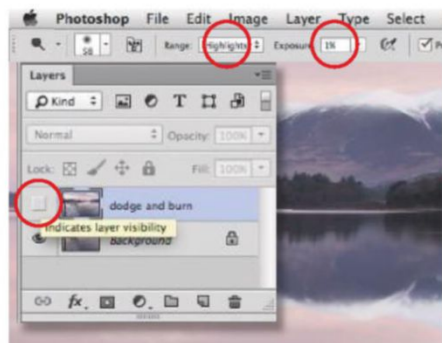
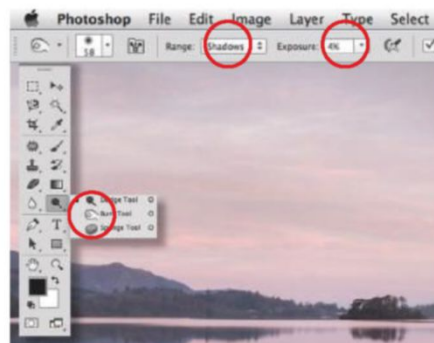
**AFTER**





## Tip 6 Dodge and Burn

These simple tools are great for selectively altering the contrast in a particular part of an image



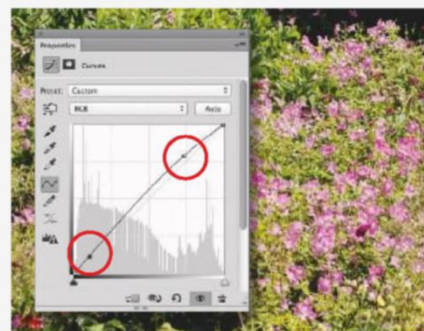
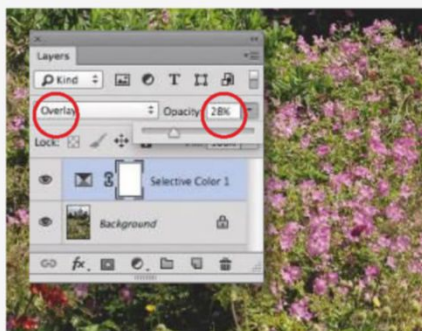
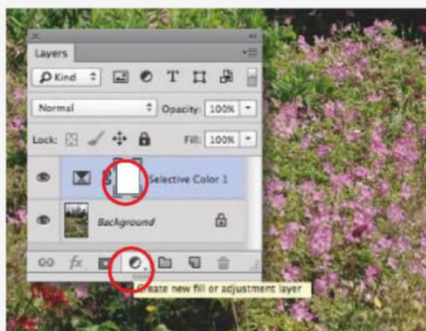
**1** The tone in this landscape is flat and could benefit from a lift. As the Dodge and Burn tools are destructive, it is best to work on a layer (Layer>Duplicate layer). Select the Dodge tool from the Tools palette, then in the top toolbar select Midtones and adjust the Exposure to under 5%. Paint over the midtones that need a lift – in this example, the jetty. The effect is subtle as it builds up, but after each pass with the tool undo the step (Ctrl/Cmd+Z) to see the difference.

**2** Once all the midtones have been lifted to your satisfaction, go back to the top bar and select Shadows. I want dark areas of the sky to be even darker to add drama, so I have selected the Burn tool. Again, paint in the effect slowly over the darker areas. Making other shadow areas darker will improve the overall contrast of the scene. However, I want to lift the shadows in the posts on the jetty, so I switched to the Dodge tool to paint the effect in.

**3** Return to the top bar and select Highlights. I want to make parts of the sky and the snow-capped mountains 'pop', so I reselect the Dodge tool. The effect is clear, so I shifted the Exposure down to 1%. Again, patiently paint in the dodge effect over the highlights. At any point you can click on the visibility of the layer to see the original image. Using the precise Dodge and Burn tool requires time and patience to build up its darkroom effect.

## Tip 7 Selective Colour Control

If you need to give a particular colour some punch, or reduce the brightness of a vivid colour, this is how to do it



**1** Some, but not all, of the colours in this image could do with added vibrance to make them 'pop'. In the Layers palette, click on the Create New Fill or Adjustment Layer and choose Selective Color. In the properties box, a colour channel will appear. In this case, I selected green as the primary colour and then adjusted the sliders to get the right tone. Adding to the black slider gives greater vibrance to that colour.

**2** For any other colours that need enhancing, repeat the process from the primary colour part. For example, there are some pink flowers that can be enhanced by working on the magenta primary colour. Now, in the Layers palette again, change the mode from Normal to Overlay. The contrast of the image will now be too great. Switch to Overlay layer mode and reduce the opacity to taste, in this instance down to 28%.

**3** Some tones in the image are a little flat or could do with a lift, particularly the shadows. The overall levels of the image can be adjusted, again via Create New Fill or Adjustment Layer and choosing Curves. Adjusting the curve a little bit brings some detail out from the shadow areas. Once the image looks good, flatten it (Layer>Flatten image) and save a new copy.

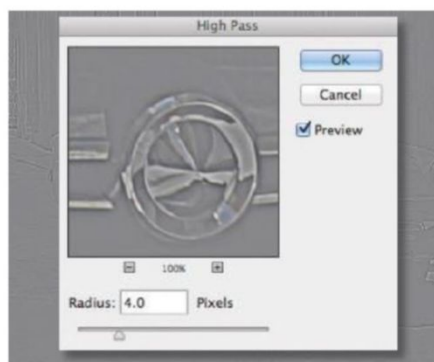


## Tip 8 Selective Sharpening

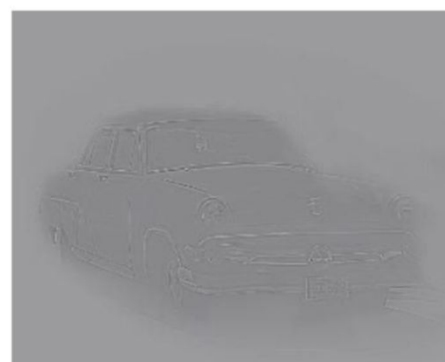
Sometimes you only want to add emphasis to a particular part of an image



**1** With your image loaded in Photoshop, duplicate the layer by selecting Layer>Duplicate Layer. Now use the Magnify tool in the Tools palette to zoom in on the area you wish to sharpen. In this case, it's the car.



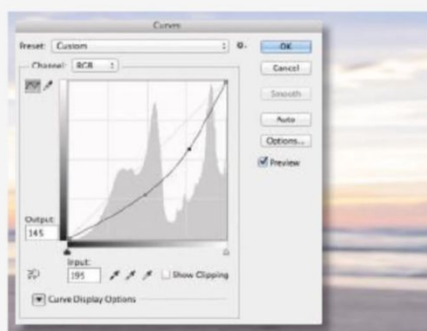
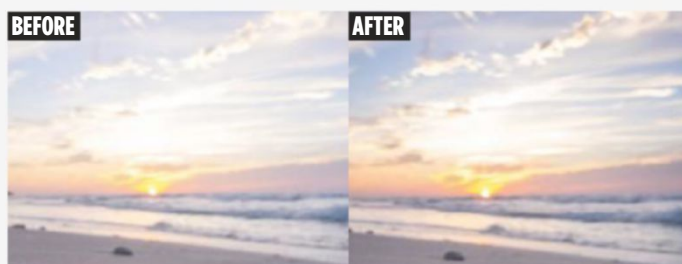
**2** With the duplicate layer selected, go to Filter>Other>High Pass. Gradually increase the strength of the Radius setting until the details that you want to be sharper are revealed. Take care not to increase the noise too much, and try to avoid creating a strong halo effect.



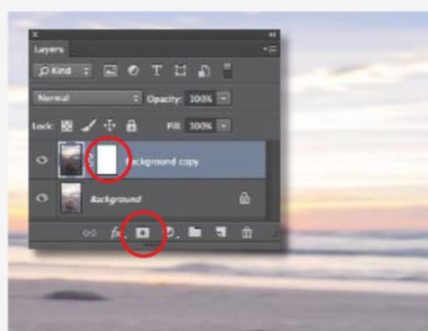
**3** Now use the Color Picker tool to select a 50% grey colour from the Color Swatches palette. Paint grey onto the areas that you don't wish to be sharpened. You can even vary the sharpening effect by changing the brush to an Opacity of 10% and slowly building up the effect. Once you have done this, change the blending mode of the High Pass layer to Overlay in the drop-down menu to reveal the final image.

## Tip 9 Selective Exposure

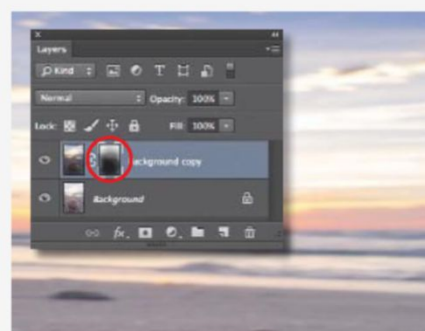
By using multiple layers and different exposures you can adjust selected areas of an image



**1** Open your image in Photoshop and duplicate it by selecting Layer>Duplicate Layer. This technique is often best used to create a darker sky, so we will darken the sky in the version of the image created on the new layer. Do this using the Curves tool (Image>Adjustment>Curves...). Aim to make the sky darker, but retain some highlight detail in any clouds. Alternatively, you can use two different bracketed images – exposed for highlight and shadows.



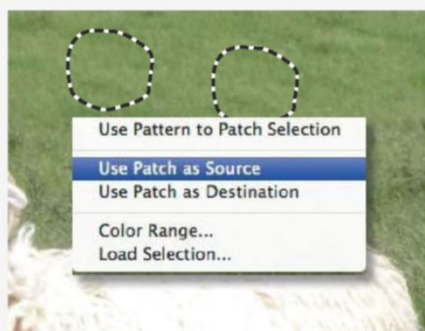
**2** Create a layer mask on the adjusted top layer by clicking on the layer mask icon at the bottom of the Tools palette. Once the layer mask has been added, click on it to select it so it can be worked on.



**3** By painting using black onto the layer mask you are effectively cutting a virtual hole in the mask, revealing the layer below. Change the Opacity of a black brush to around 10% and slowly paint the areas of the image that you wish to be lighter. The layer below will reveal itself gradually, giving you the best combination of the two images. If you make a mistake, simply use a white brush to paint the mask back on.

# Tip 10 Remove Small Objects

A stray bit of rubbish can spoil a landscape image. Here is how to quickly remove small objects



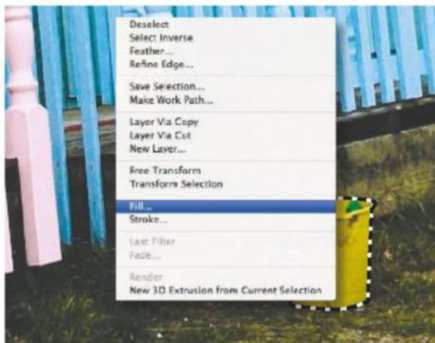
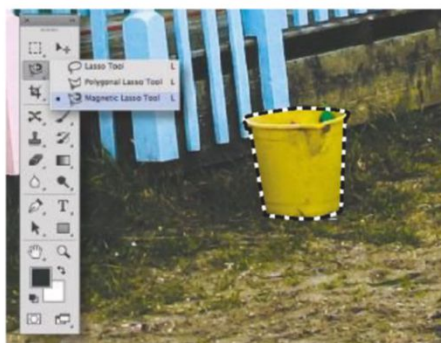
**1** The Clone Stamp and Healing Brush tools are widely used for removing small objects from a scene, but the Patch tool also works well and is generally a quicker method. Distant sheep and small objects in the grass litter this landscape, detracting from the main subject matter. Start by making a duplicate of the original image (Layer>Duplicate Layer). Select the Patch tool from the Tools palette and then draw around the object that needs to be removed.

**2** Right-click (PC) or Ctrl-click (Mac) inside the selection area and select 'Use Patch as Source'. Click and drag the selection area to a nearby part of the frame – in this case a clean patch of grass. The object has been removed.

**3** Images like this one have several objects to remove, so repeat step two until the objects are gone. For trickier selection areas, such as the lake at the rear of this scene, you may need to use the Clone Stamp tool to tidy up any misaligned areas. Select the Clone Stamp tool from the Tools palette and hold Alt and click to select the surrounding area to clone from, then use this to tidy up any misalignment.

# Tip 11 Remove Large Objects

Use the Content-Aware Fill tool to remove larger distractions from your photographs



**1** Content-Aware Fill is useful for removing large unwanted objects from an image, such as the plastic bin in front of the beach huts in this scene. It is best to work from a layer (Layer>Duplicate Layer). Depending on the object that needs removing, select the appropriate Lasso tool from the Tools palette. I have used the Magnetic Lasso tool because the bucket is distinguishable from its surroundings. Select the immediate area around the object.

**2** With the mouse inside the area selection, right-click (PC) or Ctrl-click (Mac) and select the Fill option. In the Contents box under Use, select the Content-Aware option, keeping the Blending Mode to normal and Opacity at 100%, then click OK. The area has now been filled in. Content-Aware Fill can be hit and miss. If the new content is clearly wrong, undo the step, reselect the area and try again. The bucket has been removed in this image, but it needs tidying up.

**3** Before tidying up the new content, flatten the image (Layer>Flatten image). The Clone tool (Clone Stamp tool) is ideal for minor alterations, such as lining up the wooden rails of the beach hut that are slightly out of line. Simply select the Clone tool from the Tools palette, then hold Alt and click to select the appropriate surrounding area to clone from and tidy up the content.



# Tip 12 Landscapes

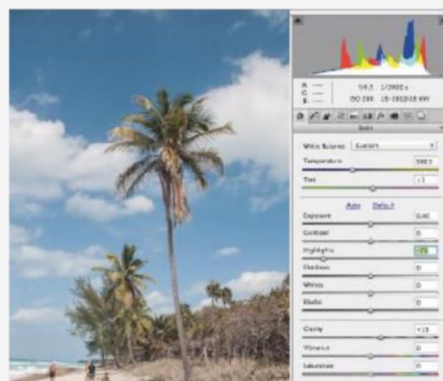
## Polarised Effect

You can't replace an optical polariser filter, but you can replicate its effect by creating a darker, more saturated sky. Just use the individual colour sliders

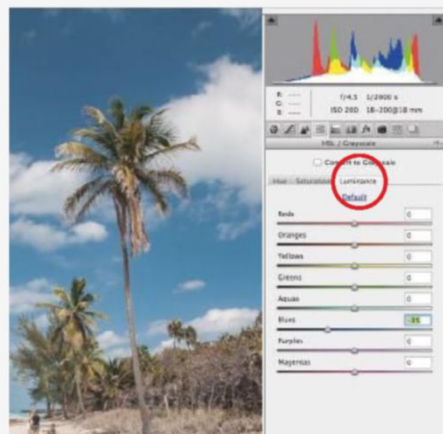
**BEFORE**



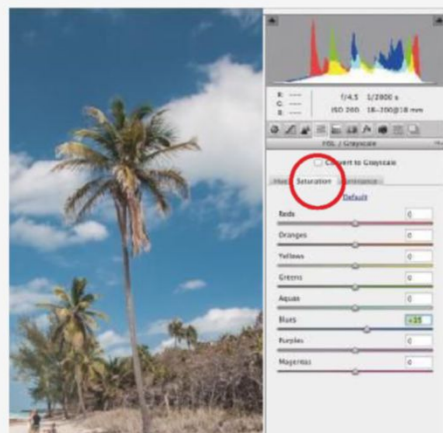
**AFTER**



**1** This effect is best applied in Adobe Camera Raw or similar raw-conversion software. Start by using the Highlights (named Recovery in older versions of Camera Raw) to darken the highlights in the sky. You may also wish to use the Clarity slider to add some local contrast to the image, which can help bring out some detail and shape in the clouds.



**2** Go to the HSL panel and select Luminance. Move the Blues slider to the left to reduce the brightness of any blue colours in the image. Obviously, you don't want to go too overboard with the effect, especially as it may affect other areas of blue in the image.



**3** With the blue sky darkened, switch to the Saturation tab and slightly increase the saturation of the blue colours. Don't apply this effect with a lot of strength as it can create a solid block of blue colour rather than a natural gradient. Finally, finish off by making any further brightness and contrast adjustments to taste.



AFTER



## Tip 13 Drop in a new sky

Take a sky from one picture and combine it with the land of another

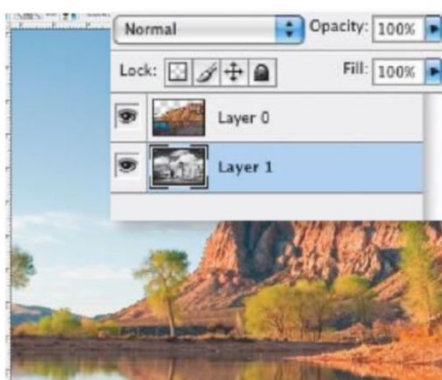
BEFORE



**1** Convert the background into a layer, which we do by double-clicking Background in the Layers palette. When prompted, you can rename the layer if you want to, but here we'll stick with the default 'Layer 0' name. To get rid of the undesirable sky use the Quick Selection tool. To make the basic selection, drag the tool across the sky, just above the horizon line.



**2** To fine-tune the selection, zoom into the picture, choose a small brush and apply the Quick Selection tool again, holding down the '+' key to add to the selection. If you go wrong, just press undo (Ctrl/Cmd+Z). Adjust the brush size as you go, editing the selection until it looks good.



**3** Once you've made your selection, choose Select>Modify>Feather from the menu and enter a value of 0.5 pixels. This will soften the edge of your selection by half a pixel, which may not sound much, but it will make the blend between the land and sky more subtle. Now remove the unwanted sky (Edit>Cut).

**4** To drop in the replacement sky, open your sky image and drag it onto the original picture. It will appear in the Layers palette as a new layer (Layer 1), covering the foreground. Switch the positions of the layers in the Layers palette, so the sky layer is below the background.



**5** The image is coming along, but the land and the sky clearly don't match so we need to convert the land (Layer 0) to black & white. With this image I selected Layer 0 and used Image>Adjustments>Black and White, using a custom conversion to selectively adjust the tonal range.



# Cable-release systems

For long exposures a cable release is an essential landscape tool. We look at six different systems

## IOSHUTTER

£59.95

[enlightphotopro.com](http://enlightphotopro.com)

The ioShutter device provides a remote-release cable for Canon or Nikon cameras that is controlled via an app for Apple iPhones. Sadly, no Android version is currently available.

The simple interface of the ioShutter app replicates the look of a classic release switch, but there are some sophisticated features, such as timer and bulb modes that allow precise shutter durations to be set. The Lapse mode provides an intervalometer for setting time-lapse intervals, while the more novel Sound and Shake options use the iPhone microphone or accelerometers to trigger the camera's shutter when there is a noise or the iPhone is moved.

If you have an iPhone, the ioShutter cable is a very useful device to keep in your camera bag, especially given the additional programmable functionality that the app provides.

## HAMA TIMER REMOTE RELEASE DCC SYSTEM BASE

£49.99

[uk.hama.com](http://uk.hama.com)

The Hama Timer Remote Release is very similar to the Phottix controller in terms of look and feel (see opposite page). However, the Hama remote has a detachable cable that uses a screw-locking jack. This means different cables can be bought so it can be used on different cameras without the need to buy a whole new remote. It doesn't feature the slide-to-lock shutter button offered by the Phottix, but instead bulb controls can be started or stopped with the main button and gauged by using the second counter on the LCD. The remote has a designated button to illuminate the LCD. The functions offered by the remote include self-timer, intervalometer, bulb and single shot.





## TRIGGERTRAP

£23.40

[www.triggertrap.com](http://www.triggertrap.com)

Triggertrap is an exciting gadget that uses a smartphone to trigger a digital camera. A Triggertrap dongle can be bought directly from the Triggertrap website or it can be bought as a kit that includes a cable to attach the dongle to the camera's cable-release port. Once connected, using the free downloadable iOS/Android app, a wide range of different triggering options are available. The standard one-touch triggering and bulb are featured, but interestingly it includes an intervalometer with a variety of settings for time-lapses. These include Bulb Ramping for day-to-night-time lapses, Distance Lapse, which works via GPS and releases the shutter when a predetermined distance has been travelled, and HDR time-lapse for images with a higher dynamic range. The app is easy to use and offers a lot more than most conventional cable releases.



## PHOTTIX TR-90

£49.99

[www.phottix.co.uk](http://www.phottix.co.uk)

Phottix specialises in making various photographic accessories, from flash triggers to this, the Phottix TR-90 digital timer and remote shutter release. This is a multi-functional remote with a built-in intervalometer. It also includes a self-timer function, long-exposure timer, bulb function, interval timer and a timer delay of 0secs to 99hrs 59mins 59secs, in 1sec intervals. The main shutter button can be pressed for simple single shots or held for bulb control. Also, the button can be locked by sliding it upwards and then unlocked by sliding it down again. The cable from the remote extends to 1m in length and is not detachable from the remote. A handy LCD illuminator is a very useful addition, as is the on/off controllable beep that sounds every second that has elapsed when shooting.



## HÄHNEL HRC 280

£24.99

[www.hahnel.ie](http://www.hahnel.ie)

This no-frills remote is the simplest model on test. It doesn't have an intervalometer, an LCD screen or a smartphone app. It is a straightforward cable release that is designed for taking single/continuous shots or long exposures in bulb mode. Like the Phottix remote (above left), it features a push-down, slide-up lock system to allow the user to take long exposures or continuous shots without holding the button down.

A detachable cable connects via a jack in the top of the remote. This allows other cables to be used with the remote. A big advantage of the Hähnel remote is the fact that it is very small and lightweight. If single-shot, continuous and bulb functionality are all that's needed, this is an ideal travel remote and generally a great addition to anyone's kit.

## POCKETWIZARD PLUSX AUTO-SENSING TRANSCEIVER

£79.99

[www.pocketwizard.com](http://www.pocketwizard.com)

PocketWizard's PlusX radio trigger is a device for the remote firing of portable and studio flash heads, which is fully compatible with the company's more expensive and highly regarded Plus III transceivers – on test here is its remote shutter-release feature. With the unit attached to a camera via an accessory cable, the camera shutter is released by a second PlusX. The controls are simple and well laid out, and apart from the on/off switch there is a large test/firing button and a rotary dial for the ten radio channels. The numbers are backlit, which is very useful in a studio setting. As a camera trigger, it worked faultlessly every time with just a cursory glance at the instructions needed to understand the process. Power is provided by two AA batteries.



# Tripods

A tripod is an essential photographic accessory. We explain everything you need to know about them

In spite of improved resolution for low-light shooting and image stabilisation in many cameras today, the tripod remains an essential accessory. Accurate framing, stability with telephoto lenses, low light without flash, slow shutter speeds and small apertures, bracketing, multiple exposures and time-lapse sequences, videos, 360° panoramas, self-portraits, awkward shooting positions – all are possible with a tripod and all are compelling reasons to own one.

It is important to get a support system that will enable you to get the most out of your camera kit, and which equips you for the type of photography

you like to do. A tripod's reach, load capacity and versatility for shooting at different angles are all factors that should be considered. Furthermore, its size and weight must be taken into account, as it will directly determine whether or not you take it out with you. After all, carrying a heavy tripod is not an enticing prospect for a full day's walking.

Like any key photographic item, there are a number of options from which to choose, so over the next four pages we will lead you through the various options for tripod legs. There are no hard-and-fast rules when choosing legs; just consider all the features and decide which are most important to your photography.

## WEIGHT

The following table indicates the difference that size and material make in real terms. Each weight indicated excludes a tripod head. These weigh another 150-400g for compact models, and 400-800g for more heavy-duty versions.

Size and type	Weight (g)	Carry comfort
Mini (A/CF)	300-600, up to 1,000	All day
Standard (CF)	800-1,400	At least half a day
Standard (A)	1,200-1,800	Half a day
Eye-level (CF)	1,200-1,500	Half a day
Eye-level (A)	2,000-2,500	1-3 hours
Overhead (A)	>3,000	A few minutes
Heavyweight studio	>3,000	A few minutes

A: aluminium

CF: carbon fibre

## SPIRIT BUBBLE

We are starting to see the introduction of cameras with electronic levels built in, for accurate and level shooting. However, there are many that still do not. A spirit bubble is commonly found on tripod heads, but is also present on some legs – typically in the upper casting. This is particularly useful if the legs come without a head.



## LEG LOCKS

Most tripods have a number of leg sections to extend their height. Leg locks are a factor in the strength of the tripod's legs. There are generally two types of leg lock – a lever lock or a twist lock – with benefits to each. A lever lock grips the legs by pinching, so to speak; it is slightly bulkier but can be quicker to operate. The twist lock usually grips the circumference of the tube and is less likely to break than a lever, but it is susceptible to dust, grit and freezing temperatures. There is no rule as to which type is strongest because this will vary between manufacturers.



# CASTING

The upper casting is made from either a lighter magnesium alloy or a heavier and stronger aluminium. There are some unique examples of materials used, like Gitzo's Sould 238°, which is even lighter. It is not unusual to find more than one type of aluminium casting in the same set of legs – one for the leg locks and one for the upper casting – as well as another type for the tubing.

Die-casting is the most common production method for aluminium and magnesium-alloy casting, with injection moulding for plastic (polymer) casting. While this method is achieved using force, Gitzo employs gravity casting, which lets gravity do the work. Much less air is captured inside the casting, which makes it even stronger.

# FEET

The material of the feet will affect how well the tripod grips the surface, and also whether they will cause any damage. Rubber feet are good for indoor use as they are less likely to cause damage, while spikes will grip certain outdoor surfaces very well but may damage indoor floors. Some tripods have metal spikes built into the rubber feet, which can be unscrewed so that the spikes protrude. Others offer spikes as extras. Furthermore, some feet have a wider surface area so they will not sink in wet ground, and still others have an adjustable angle to suit legs that can spread very wide.

# TUBING

Carbon, aluminium and plastic: just what is the difference?

While wooden tripods are still available, most tripods are manufactured from three main material types: carbon fibre, aluminium and plastic. Each type has its own benefits, be it value, strength or weight.

There are some unique examples of alternative materials being used by certain manufacturers for leg tubing, such as basalt and titanium. These fit somewhere between carbon fibre and aluminium in terms of cost, strength and weight.

The exterior of the tubing can be grooved, smooth or shiny. A grooved finish, as found on Benro tripods and some other models, prevents the legs from spinning around when they are unlocked. Some of them feature a soft grip on the legs, made from rubber (**typically nitrile butadiene**), which makes for easy and comfortable carrying in hot and cold weather.



Multi-directional carbon fibres increase the strength of the tubing. Here there are six layers

## CARBON FIBRE

Tripods made from carbon fibre are the most expensive type. They are chosen by professionals because it is the lightest and strongest tube material, and tripods that are constructed from it offer the best weight-to-stability ratio. What this means, though, is that the cost increases significantly. This is demonstrated clearly by manufacturers that sell both carbon-fibre and aluminium tripods, with the cost of carbon-fibre tripods often increasing threefold compared to those made from aluminium.

Which version to buy is not quite so clear-cut, however, as it is about more than crunching numbers. The strength and weight of carbon-fibre tubing is affected by several factors: the production process, the number of layers, the purity of carbon fibre, and the density and direction of the fibres. As such, the level of quality differs between manufacturers.

Epoxy is used in the production of carbon fibre, and so traces

can be present in the fibres, usually between the layers. Manfrotto and Vanguard are two manufacturers that claim their tubing to be 100% carbon fibre, with no epoxy between the layers. Gitzo tubing features both crossed and longitudinal-direction fibre layers for increased strength, and the fibres are the densest at 1,200 strands per fibre. Carbon fibre with a density of 400 or 600 strands per fibre is cheaper to manufacture, as is non-pure carbon fibre. This is why carbon-fibre tripods vary in price.

The number of layers in tubing is one of the most publicised pieces of information from manufacturers, and is certainly a factor that affects its strength. Manfrotto states three layers, whereas Gitzo, Giottos and Vanguard say six layers and Benro eight. However, this number of layers is not necessarily defined in the same way across manufacturers, and so it is not always the most helpful information for gauging strength. The maximum weight load gives a clearer indication. Gitzo's six-layer carbon tubing is made up of alternate longitudinal and crossed-fibre layers for added rigidity, while Vanguard's tubing has multi-directional fibres. In theory, the more layers and more densely packed the fibres, the heavier the leg should be, but this is not always the case.

## ALUMINIUM

Aluminium is a popular choice because it is more affordable than carbon fibre, yet many of these tripods can appear virtually identical to their carbon-fibre counterparts and offer the same features. The main difference, however, is that aluminium is much heavier, although advances in aluminium tubing have seen the weight of the material reduced, primarily thanks to a lesser tube thickness. Another factor, as with carbon fibre, is the purity of the composition. The purity of aluminium tubing ranges from 100% in high-quality models, down to 40% or even lower. Virgin aluminium is stronger than recycled and is generally the type used for tubing, with the lower-quality aluminium used by some for casting.

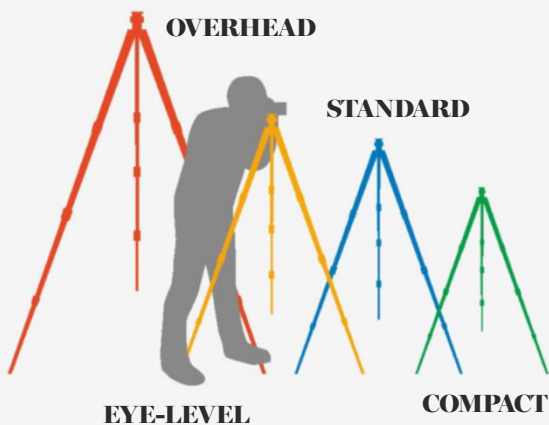
## PLASTIC

For those on a tight budget, plastic is a great choice, but is not recommended for DSLR users because it will not support heavy bodies. These tripods are typically for compact cameras and are much less durable. Spending a little extra on a tripod that will last can, in the long run, be the cheaper option.



## TRIPOD HEIGHT

Tripods come in a variety of sizes depending on their purpose. Make sure you get the correct height for your needs



## REACH

Tripod legs are typically grouped into four levels of reach: compact (mini), standard, eye-level and overhead. Each size up has larger legs than the size below it, or more leg sections to achieve a higher maximum reach. Three- or four-leg sections are standard, although the more sections there are, the thinner the tubing gets and the greater the number of leg locks, which will in turn affect the strength of the tripod.

Clearly, the size of the legs affects the weight of the tripod. Mini tripods offer a compact platform, but won't support heavy cameras or reach eye-level, so are more awkward to use. There are pros and cons to each size, but lightweight traveller tripods are a good option because they fold away small

but often still reach eye-level.

Equally, reach is considered in terms of how low the legs can go (minimum reach). This is affected by how wide the legs can spread and whether the central column can be reversed. Cheaper tripods will typically have a fixed angle to which the legs can be pulled out, whereas more expensive models often offer three angles and the option to adjust each leg independently. These angles tend to be roughly 25°, 55° and 80°, which is ideal for shooting awkward surfaces and low angles.



## MONOPOD

A monopod is a single-leg support that is ideal for use with large and heavy telephoto lenses. It is common to see press and sports photographers using them. Recently, we have seen a monopod built into a tripod in the form of 3 Legged Thing's 'Brian' carbon-fibre tripod.

## CENTRAL COLUMN

A tripod's versatility is hugely affected by whether it has a central column, and its level of functionality. Many older types have a geared lever to crank up the height of the column, which gives sturdy but slow operation; other columns are simply unlocked manually by a twist lock, pulled into place and locked again. The central column further extends the maximum height, although this affects the tripod's stability. In some cases it can be removed and flipped upside down for low-level shooting (great for macro), or even set horizontally for positioning a

camera at overhanging or difficult angles, such as over a stream and for wheelchair users.

The speed at which the column can be operated is a key consideration. Manfrotto's version has a quick-adjust central column for horizontal positioning; Vanguard has a similar column that can be positioned at any angle between 0° and 180°; Giottos allows horizontal positioning but is slow to adjust. Vanguard's Nivelio mini tripod can swing its column upside down without it being removed, which is a much quicker form of operation.



## FOLDED HEIGHT

A tripod's height when folded is an important factor for storage and travel. An extra leg section will give greater height, but could well fold away as small as those without. Legs fold away in different ways, and this affects the fold size. Traveller tripods fold the legs up 180° and into the central column, which is around 20% more compact than the standard fold-in legs. One of the most compact tripod designs we have seen is the Benro Traveller series. Its design positions the legs in a line rather than around a central point, which means they fold away flat. This does, however, limit the functionality of the legs.

If a tripod is likely to accompany you on your travels, then weight and size must be a consideration. It can be worth buying two tripods: one for regular use and a more compact model for travelling. Do check with your airline for weight allowance and permitted hand-luggage dimensions – typically 560x450x250mm – and then check your tripod. It could be the difference between checking it in or attaching it to the side of your camera bag and taking it through as hand luggage. Unfortunately, there is no definitive answer to whether a tripod can be taken as hand luggage, with people having mixed experiences, but frequently they are being allowed to take it through. If you check it in, wrap the tripod up in clothes and place it in the centre of a bag.

## HOOKS

On many models a hook can be found at the bottom of the central column, or in some cases added as an extra. This is useful for hanging a weight to increase the tripod's stability.

## TOP TIPS

**1** Buy extra tripod plates, one for each camera you own. It saves time over removing and refixing a single plate if you use multiple cameras on the same day's shooting.

**2** Think about transporting your tripod. If a case with a strap is not included, then factor in the cost of buying one. Other options include a separate shoulder strap or, if possible, attaching the tripod to your camera bag.

**3** Pushing the legs down is a good test of the strength of leg locks, but twisting the legs tests stability.

**4** Check the head drift by mounting a longer lens on your camera. Gitzo claims a 0.03% tolerance, but other tripods may be significantly higher, which is frustrating when trying to frame precisely.

**5** Consider other types of camera support. Options include a beanbag, a piece of string (SteadePod), a monopod, bendy tripods (Joby) and pocket tripods for smaller cameras.

## TRAVEL TRIPODS

	 <b>3 LEGGED THING Brian</b>	 <b>BENRO Travel Angel 2</b>	 <b>GIOTTO Vitruvian VGRN8255</b>	 <b>GITZO Traveler GT1542T</b>
Materials	Carbon fibre	Aluminium	Carbon fibre	Carbon fibre
Min height (cm)	12.5	40	27	22 (without head)
Max height	204	156.5	165	149 (without head)
Weight (kg)	1.715	1.73	1.38	1 (without head)
Max load (kg)	8	8	6	7

Brian offers an expansive range of shooting heights, with no compromise on stability, making it a great all-rounder. It might be slightly heavy, but the monopod leg is a nice touch, and 3 Legged Thing's Brian sits quite rightly near the head of this pack. It costs around £360.

The Travel Angel 2 (around £170) is the heaviest tripod here, but it's also one of the most stable and is capable of holding a solid load. Overall, it's a good choice for long-lens wildlife shots, but not quite so ideal for long treks through the countryside.

It folds down to a small size, weighs little, holds a lot and can take a camera from ground level to over 1.6m. In short, the VGRN8255 offers everything that could be wanted in a travel tripod, with no obvious downside. The £270 price and five-year warranty are a bonus.

Light, versatile and capable of supporting a serious load, the Gitzo Traveler GT1542T ticks all the right boxes, but the financial outlay limits it to those who consider £500 to be 'pocket change'. For the rest of us, an extra lens might be a better investment.



# Improve Your Photography

'There is no better way to learn and improve our photography than to enrol on a proper course, led by qualified and experienced tutors who can offer one to one coaching and guidance. Our own SPI courses have been created by respected tutors, with the collaboration of the *Amateur Photographer* and *What Digital Camera* teams, to ensure they're tailored to the needs of our readers, and by allowing you to work at your own pace they're ideal for those of us with busy lifestyles.'

**Nigel Atherton,**  
Group Editor



## Student profile

'I enrolled on an SPI course because I felt my progress had levelled off, and I wanted professional guidance as to how I may improve. So far, I have enjoyed the course, the tutor guidance is very helpful, and the flexible nature of the course fits well with my busy working life.'

**Stephen Dale**



# DIPLOMA IN DIG

## How the course works

**A**S THIS is a home study course, students are free to work at their own pace and in their free time. There are no classes to attend, the course is all-year round and you can enrol at any time.

On joining, you receive the course manual and the module book, which outlines the work you need to submit to your tutor as you progress through the course. You can work to suit your own schedule, but 10 modules should be completed within two years.

Students are assigned a personal tutor who is responsible for providing written feedback and guidance, and who will be able to answer any questions. Tutors are fully qualified photographers and either teach photography professionally or have extensive occupational experience within the field.

On successful completion of the course you will receive a certificate graded and signed by your tutor and the SPI senior tutor.



## Course outline

**T**HE course consists of 10 in-depth modules, designed for a person with a confident grasp of photographic technique who wants to learn how to capture and process a digital image to a high standard. The fully illustrated course workbook covers everything students need to know to complete the course successfully.

### RETOUCHING

Learn how to use filters and various tools to remove dust and unwanted objects from images.

### SHARPENING

Sharpen images using unsharp masking in your image-editing software and analyse your results.

### WORKING IN MONOCHROME

Selectively convert a colour image to monochrome and tone a monochrome image.

### A DIGITAL PORTFOLIO

Students select a coherent set of images for a portfolio and produce good-quality prints for presentation.

### FINDING OUT ABOUT YOU

Approach a wide variety of subjects and give your tutor an insight into your photography.

### COLOUR CONTROL IN SOFTWARE

Correct colour casts in your images – creatively adjust colour in your images for effect.

### EXPOSURE

Master exposure for highlight and shadow detail and predict the range of tones your camera can record.

### IDENTIFYING TONES

Learn how to use the Levels tool to adjust, contrast and brighten your images.

### USING CURVES

Be confident when using curves – create complex curves to adjust contrast.

### WHITE BALANCE SETTINGS

Identify common types of light and decide on the best white balance setting to suit your light source.

# ITAL PHOTOGRAPHY

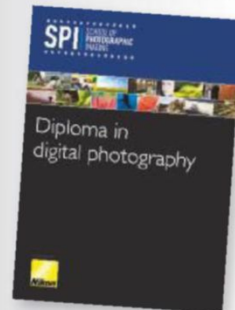


## WHY SPI?

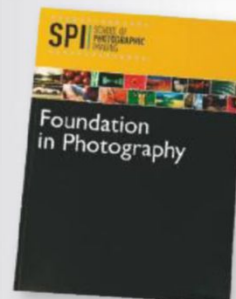
- Master your camera and hone your photography skills.
- Study in your own time and at your own pace.
- Receive detailed feedback from an expert photographer.
- Plus get a massive 50% discount on the full price of an annual subscription to *Amateur Photographer* or *What Digital Camera*. (Overseas students receive a 40% discount).

## ANY QUESTIONS?

For more information or to enrol on a course please contact the course administrator on 0203 148 4326 or email [spiadmin@timeinc.com](mailto:spiadmin@timeinc.com)



## ALSO AVAILABLE



### Foundation in Photography

Learn how to take images of a high technical standard and artistic quality, from the basics of composition to shutter speeds and movement.



### Foundation in Digital Imaging Techniques

Take control of your images and master the techniques of digital imaging software to edit and enhance your photographs.



### Foundation in Digital Photography

Learn how to utilise your camera's various tools and settings to take exquisite images and push your photography to the next level.

[www.spi-photography-courses.com](http://www.spi-photography-courses.com)





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- ROBUST INTEGRATED SHOCKMOUNT INC. DEAD KITTEN
- RUNS ON 9V BATTERY - LASTS FOR UP TO 100 HOURS

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STEFAN LANGE, JAMES BOND 'SKYFALL'

AVAILABLE TO PURCHASE FROM



# Landscape Accessories

We've covered filters, remote releases and tripods, but what are the other items that you should consider when heading out to shoot landscape images? We round up 15 items you should be packing

## GITZO SERIES 2 TRAVELER GM2561T MONOPOD

£194

[www.wexphotographic.com](http://www.wexphotographic.com)

Sometimes a tripod isn't appropriate or convenient, but a monopod is useful for giving extra stability, especially with long lenses. The Gitzo Series 2 Traveler GM2561T has six sections, so although it can extend to 143cm, it packs down to just 36cm. It is made from Gitzo's 6x carbon fibre, so it only weighs 0.33kg.



## NORTH FACE ETIP GLOVES

£30

[www.thenorthface.co.uk](http://www.thenorthface.co.uk)

These stretch-to-fit fleece gloves from North Face are named 'Etip' for their conductive tips, which allow touchscreens to be used through the gloves. It works almost perfectly, and the thin material of the gloves means your dexterity is almost to the same level as when operating bare-handed. Using a touchscreen to focus or compose a shot is easy, as is operating the dials and buttons on a camera body. There are limits to how responsive it is – you'll find yourself taking a lot more care than usual when typing on a touchscreen – but for a photographer's purposes the Etip gloves are excellent.

Silicone patterns on the palm provide extra grip, and there'll be little or no danger of dropping a camera or phone while wearing these. If you're heading into absolute biting cold, you may want something with a little more padding to it, but otherwise the North Face Etips fit a great deal into a slim package.



## SPUDZ PRO

£7.99

[www.alpineproducts.com](http://www.alpineproducts.com)

Spudz Pro is a convenient, portable and affordable cleaning kit that can be attached to keys, lanyards, belt loops, straps and bags. Containing a 10x10in (254x254mm) microfiber cloth stitched into the holder and a 4ml cleaning solution, the Spudz Pro is a much better alternative to using the inside of your shirt for cleaning your lens on the move. It's so easy to misplace lens cloths and they're no good when you're out and about if they're tucked away safe inside your bag, but the Spudz Pro is always accessible.



## LENS HOODS

FROM AROUND £4

[www.amazon.co.uk](http://www.amazon.co.uk)

If you're travelling, hopefully you'll be somewhere bright, and if that's the case a lens hood will definitely come in handy for blocking out stray light and reducing glare. If your lens came with a branded lens hood then take that with you by all means, but if not, or if you've misplaced the original, websites such as Amazon are a great place to find third-party lens hoods for low prices.

## PEAK DESIGN CUFF

\$19.95 (AROUND £11.90)

[peakdesignltd.com](http://peakdesignltd.com)

For those who dislike traditional camera straps, the Cuff is definitely the way to go. A superbly engineered wrist strap, the cuff is so light that it's easy to forget you're wearing it. It doesn't skimp on strength – the quick-connecting micro anchors are rated to take weights of up to 45kg, despite how easily they can be fastened and unfastened.

POLAROID OPTICS  
HD MULTI-COATED VARIABLE  
RANGE NEUTRAL DENSITY  
(ND) FADER FILTER

FROM AROUND £27

[www.polaroidstore.com](http://www.polaroidstore.com)

If you're travelling to sunnier climes, the bright sunlight will inevitably result in smaller apertures and shorter exposures, and for those looking to create shallow-depth-of-field effects or water blurs, a neutral density filter is essential for reducing the amount of light entering the lens. Polaroid's Variable Range ND filter has a range of eight ND settings available by turning the exterior ring, using the stepped scale as a guide. Using your camera's metering, you dial in the strength of filtration until the desired length of exposure is reached. Polaroid's Variable Range ND filter is available in a wide range of filter thread sizes and is great value for experimenting with long exposures.

FREELoader  
SOLAR ISIS

£64.99

[www.solartechtechnology.co.uk](http://www.solartechtechnology.co.uk)

If you're seeking the sun this summer, then the new Freeloader iSIS by Solar Technology is a worthy travel companion. Using a built-in, high-density solar cell, the iSIS can charge its 4,000mAh battery powered only by the sun. It can also be charged by Micro USB from a mains plug. Once charged, this can be used to power your devices on the go. By simply plugging a USB into the underside or using the built-in Micro USB/Lightning connector, the iSIS will charge a smartphone twice from a flat battery.

## CLIK ELITE PROBODY SPORT

AROUND £112  
www.clikelite.com

The ProBody Sport from Clik Elite is a lightweight backpack, ideal for photographers who enjoy travelling and outdoor pursuits. The camera kit section, although not enormous, houses a Canon EOS 5D Mark III and two lenses securely, and there is a neat Velcro-secured memory-card organiser with space for filters. The zipped top section has plenty of space for a rain jacket and supplies, and there are zipped sections suitable for maps, sunglasses and a mesh side pocket, which will take a small tripod. I liked the inclusion of space for a water bladder in the back section. A stylish and tough camera backpack for sporting photographers.



## BLACK RAPID CROSS SHOT

AROUND £45  
www.blackrapid.com

When you are travelling and sightseeing with a DSLR, you need a strap that supports your camera comfortably and keeps it available for immediate use. The non-slip moulded rubber shoulder pad on the Cross Shot is comfortable and spreads the load of the camera well, hanging across the torso from either shoulder. The fastener screws into the camera's tripod thread with a rubber washer to hold it securely in place. A Lockstar mechanism prevents the karabiner from accidentally opening. The webbing strap has more than enough length for any size and locking bumpers to secure the camera when not in use.



## NAVITAS POCKET PACAWAY

£39.99  
www.navitasapparel.com

It may be summer, but rain is still a fact of life on our weather-beaten isles. The Navitas Pocket Pacaway is a perfect insurance policy against our capricious climate – a jacket made from waterproof and windproof fabric that packs away into its own pocket when not in use. Once packed away, it measures 150x200x70mm and thus can be packed away in a rucksack or shoulder bag with ease, weighing very little. A perfect summer jacket, at a pretty reasonable price to boot.





## LEXAR MEMORY CARDS

FROM AROUND £18

[www.lexar.com](http://www.lexar.com)

It may sound like a trivial inclusion, but having reliable and fast-reading memory cards is a critical component in any photographer's set-up. Lexar's Professional UHS-I range starts at around £15 for 8GB SDHC cards and £30 for 8GB CF cards, and have a read transfer speed of up to 600x (90MB/s) and 1066x (160MB/s) respectively. They're suitable for anything from fast-burst shooting of high-resolution images to filming full HD and 4K video on a DSLR. Having a high-speed card will improve workflow and keep you shooting without having to worry about waiting for the images to buffer.



## XSORIES ROAMX

AROUND £24

[www.xsories.com](http://www.xsories.com)

If you are heading abroad this summer, then a plug adapter is vital for making sure that your camera battery remains charged. The XSories RoamX is a great option and can convert a UK three-pin plug so that it can be used in virtually any plug socket in the world. Even better, the

adapter has two USB sockets built in, so you can charge up to three devices at the same time. With many cameras, smartphones and tablets able to charge via USB, you may only need this adapter and a couple of USB leads to keep your gear powered up this summer.



## PNY MEMORY CARD CASE

AROUND £10

[www.pny.eu](http://www.pny.eu)

Considering how reasonably priced this efficient little case is, it almost seems silly not to get one. PNY's case is able to hold up to four CompactFlash cards and eight SD cards, protecting them with a rigid black polycarbonate that's tough enough to take a good few knocks. Rubber water sealing protects the closed case from water ingress, and a loop on the side allows it to be attached to a thin strap.



## KINGSTON MOBILELITE

AROUND £30

[www.kingston.com](http://www.kingston.com)

The Kingston MobileLite has its own built-in Wi-Fi and allows users to send files directly to an Android or iOS device via the MobileLite app. Once the app is connected to a device such as a smartphone or tablet, the MobileLite app will recognise an external hard drive, USB flash drive or an SD card that is connected to it. That means users see all of the media on their storage media and can then share it direct from the device. It's a great tool for uploading images directly from a smartphone.





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